The Builder.

No. CLXXXVIII.

SATURDAY, SEPTEMBER 12, 1846.

THE northern wing of the Privy Council Office, Whitehall, as altered by Mr. Barry, is to be commenced immediately. A boarding has been formed preparatory for taking down the old Treasury offices, on the site of which it will stand, and an eyesore in one of our noblest thoroughfares will thus at last be removed. The structure in question would probably have been removed long ago, for the completion of Sir John Soane's design, but for an oversight in setting out his new building, which would have made the continuation of it advance so greatly on the foot-path, as to have interfered with the regularity of the street. Now that the old deformity is really coming down, we have one plea to make for it, which is that its Tudor doorway, and other similar parts, relics of a more ancient building, may be safely preserved.

Little did Sir John think when he finished his Privy Council Office in 1825 or 1826 (with the exception of the north wing), that the artistical part of it would so soon give place to the work of another; indeed, a much less partial witness if appealed to could scarcely have expected that such would be the case. So quietly and quickly too has it been done, that the public have been asked how they like the alteration, before they had inquired whether it was necessary or desirable. The want of greatly increased accommodation, and the required alteration of the line of front, appear conjointly to have led to it, and unquestionably the metropolis is a considerable gainer in consequence.

The front is exceedingly ornate above the ground-floor, and displays that carefulness in the details apparent in all Mr. Barry's works. Attached Corinthian columns (a long series), on rusticated piers brought out from the front wall to receive them, carry a highly enriched entablature, which is crowned in the centre portion of the composition by a balustrade. The wings have an attic story, terminated with a similar balustrade. An enriched frieze is introduced under the cornice of the attic, and on the face of the attic pilasters are carved "drops" of fruit and flowers. The pedestals in the balustrade carry urn-shaped vases; those at the angles of the wings are more lofty than the others. The entablature breaks over every column, as does the attic cornice over the pilasters; and with the piers on which the columns stand, the pilasters, pedestals, and vases, give that predominance to the vertical line which obtains in the greater number of Italian structures raised during, or soon after, the Revival, and which resulted almost necessarily, from the employment of adventitious columnar decoration.*

These numerous breaks in the entablature produce a certain degree of flutter, not altogether free from objection. A stronger ground of objection, however, for those who are anxious to cavil, is a want of unity. We do not mean to say it can be urged justly that the parts are in any degree discordant—quite the reverse; all are homogeneous, and in good agreement,—but that it fails to point itself out as one public building. It may appear to the stranger to be a range of Government offices, or a series of private residences; and this we hold to be a failing; but then it is a failing which belongs rather to circumstances than to the architect.*

As we are in Westminster, let us look in at the new Houses of Parliament (notwithstanding the notice posted at the principal entrance),† where the same able architect is expressing himself in a different language.

The objection to which we have just now alluded, is often urged against the Westminster Palace, but has never seemed to us valid, even in its present state. And it would not be difficult to shew the reason why. Moreover, when the design is completed, when the towers rise to their intended height, the effect will be to alter the outline entirely, and group the whole, more perfectly still, into one pile.

In the House of Lords, to which, more particularly, attention is now directed, the works are making rapid progress. The ceiling and upper part of the walls are finished, and carvers and joiners are occupied in every corner of the place in fixing the wainscot fittings, both in the House and lobbies. Those in the former are most elaborately carved out of the solid, and reflect great credit on the workmen.

The decorations will be gorgeous—dazzling. The ceiling, formed into deeply-sunk panels, is covered with gold and colours. Under each wall-piece, from principal timbers, is a sculptured canopy and niche, solidly gilt where finished, between which occur the windows, to be filled with stained glass (six on each side), and compartments for fresco.

The *Athenæum*, in a recent number, expressed some misgivings as to the propriety of such adornments: "because, though casual visitors may be more than satisfied — even enchanted — 'My Lords,' themselves, are likely to feel sated by the constant blaze of so much architectural and pictorial pomp. Such a sumptuously, not to say extravagantly adorned hall, would be more in place within the walls of Windsor Castle, for royal banquets and festivities, than as a place for solemn debate on grave and anxious matters. Putting propriety of purpose out of the question, we entertain great doubts, too, as to the effect which such profusion of painted glass as is intended will have upon the fresco paintings. Besides that gleams of coloured light may occasionally fall from the windows upon parts of the mural pictures, quite different in hue from the colours on the latter,—will not the windows overpower the paintings, and cause them to look flat and dull, by comparison?—or can that inconvenience be remedied by exaggerating the colours of the frescos, and painting them up accordingly?"

It further says:—"We may be allowed, also, to ask, whether another matter has been taken into consideration—because if it has hitherto been forgotten or overlooked, attention should be directed to it without further delay. Will not the effect and character contemplated for the 'House' be, in great measure, lost at those particular times when the place will be chiefly used for business? After dark, the painted windows will not show themselves otherwise than as gloomy gaps and vacancies, occupying the upper half of the two side walls. A singular degree of brilliancy might, however, be obtained at night, by lighting up the House chiefly, if not entirely, from without—by means of gas burners on the outside of the windows. This would be further useful as helping ventilation. The plan appears to us to have, independently of its novelty, much to recommend it;—should there be objections to it, not perceived by us, we yet hope that while they have their due weight, the suggestion itself will not be wholly disregarded—merely because it is a suggestion."

The effect, we venture to think, would be much more agreeable without these illuminated windows than with them. Relative to the windows themselves, we cannot find that any of the glass painters are engaged upon them; certainly not the London artists, which is somewhat surprising, considering the shortness of the time which is to elapse before the Peers are to meet there.

Some anxiety, we know, prevails on this subject amongst the glass painters who exhibited their works to the Commissioners.

One work in fresco is already completed, the "Baptism of Ethelbert," by Mr. Dyce. It occupies a very honourable position at the west end of the chamber, and is an admirable specimen of the art.

This article having taken a gossiping form, we will say a word or two on some recent proceedings in another public building, which shew that we have yet much to learn.

After unsuccessful trial of divers new materials, the open area of the Royal Exchange is again paved with the "Turkish stone" that formed the pavement of the old building, and which, we cannot avoid saying, looks very coarse, inartificial, and unworthy of its position. Tessellated pavement was laid in the first instance, and failed. This gave place to asphalte; and then the asphalte was cleared away to let in the old stones again. We look on these failures as something almost disgraceful, not to the architect of the building, but to industrial and artistical England. The Romans constructed magnificent pavements here more than fifteen hundred years ago, which, when opened, as at Woodchester and Cirencester, lately referred to, or in Threadneedle-street, close to the building in question, are found even now solid and substantial, brilliant and effective. We, with what they have done before our eyes, and with all our boasted advances in knowledge and our improved machinery, make two attempts to produce a pavement for the chief building in the city of London a *little* out of the common way (only *very* little), and failing utterly, are obliged to go back to the old stones of the former area!

The occurrence is suggestive, and should induce consideration.

A WORD TO ARTISTS.—Use the simplest and best-understood medium: do not risk the premature destruction of your paintings by indulging your caprice or making experiments in the wrong place. Several of Hilton's pictures are beginning to present a melancholy appearance, through the failure of the medium employed. The eye of the principal figure, in his fine work from Spenser, deposited in the National Gallery, has actually *floated out of its place*. The picture has been reversed, in order to get the eye back again—but success seems doubtful.

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* The predominance of the vertical line in the new building has been already remarked on in the current number of "The Civil Engineers' Journal," which, we should mention, gives an excellent representation of the front.

* The whole length of the front, when completed, will be 296 feet; the height of centre part, 56 feet 6 inches; and of the wings, 67 feet 6 inches. The latter is made out thus:—

Height from pavement to base of column		19 ft.	0 in.
" of columns		26	6
" entablature		7	6
" attic		11	0
" balustrade		4	6
		67	6

† "Great inconvenience and interruption to the progress of the works having been occasioned by the admission of strangers, the issue of all further orders of admission is henceforth prohibited."

THE ECCLESIASTICAL ARCHITECTURE OF PISA.*

In the early churches the campanile was not employed, as bells were not introduced into Italy till the seventh century. It then long continued to be not an integral part of the design, and was frequently quite detached, as in the example at Pisa. By some, however, it is thought that the foundations in Italy, frequently precarious, prevented its erection, as unequal pressure would perhaps have occasioned disastrous results. The writer in the *Quarterly Review* argues that it originated north of the Alps. The campanile of Pisa is in eight stories, but had originally but seven. The plan is circular, consisting of six peristyles, or stories of circular porticoes, besides the lower and bell stories. It is not improbable that the design, which is of great beauty, was suggested by similar towers in Roman buildings, of which there was one called the Septizonium, at Rome; and the Coliseum itself may have had some influence.† The columns support arches, and have capitals of Corinthian character, but displaying great variety. The arches in the lower story are solid, and the wall is here 13 feet 5 inches thick. The staircase is in the thickness of the wall. The upper story is vaulted over, an opening of hexagonal form being left; above this is the bell story, which according to Morrona, was added by Tommaso, of Pisa, in the middle of the fourteenth century. But the greatest interest attaches to this campanile from its inclination, which is about 12 feet 6 inches from the perpendicular, and though the line of the centre of gravity falls within the base, it could hardly have remained standing, had not the architects taken extraordinary care, by means of metal cramps and good construction, to keep the masonry together. It withstood the shock of the earthquake, which lately did so much injury to some of the buildings at Pisa. The writer of a letter, already quoted from in these pages, says, "The leaning tower survived the shock, and is still firm. I ran to see what had become of it, and great was my surprise at finding it still standing and firm. What an object it must have formed at the moment of the shock. Those who had the opportunity of observing it, assured me that its vibrations were most awful." It not only leans, but is twisted in a curious manner, which it is almost impossible to represent. The architects seem to have attempted after the first failure, to bring it back to the perpendicular, so that the lines seem in no regular direction. An idea has long prevailed, that the architects, Bonano of Pisa, and William of Inspruck, who commenced the building in 1174, intended it as a display of their skill. Such might have been the case in a building like the Garisenda Tower, at Bologna, another remarkable instance, but could hardly have influenced the architects of a beautiful structure like this. The altar of the cathedral, erected in 1774, standing within a short distance of the campanile, sank soon after it was put up, and would seem to prove the nature of the foundation. The campanile has sunk much into the ground, which has had to be excavated round it to show the base. The note-books of travellers record all kinds of impressions, either at looking up at the overhanging mass, or on looking down at the low side from the summit, protected by a single iron rail, where the feet seem to be without support. The steps lean in all directions, and a curious delusion is produced in descending to the open doorway, where the jambs appear perpendicular, and the columns and windows of the cathedral inclined.

Of the different buildings included within the monastery of the middle ages, the quadrangle of cloisters is perhaps the most beautiful and interesting. There, meditation seems to hold her residence, and memory to tell of those, who once paced the long-drawn aisle, but are now beneath the turf which those cloisters inclose. Something of this, we might feel, within the Campo Santo of Italy, that cloistered quadrangle, which took its name from the cemetery of Pisa, the earth of which was brought from the Holy Land.

Towards the end of the 12th century, Archbishop Ubaldo, having been driven from Palestine, brought his vessels home laden with the sacred earth, which he deposited on ground on the north side of the cathedral. The present structure was commenced in 1278, according to the Pisan chronology, which is a year later than the common style, and is said to have been finished in 1283. Giovanni di Pisa was the architect. It forms a quadrangle, resembling the cloisters of a monastery, within which certain families had the right of burial. The walls were decorated with frescoes, and monuments were erected to those whose remains were deposited. Many of these monuments were Roman works, some of them intended for a very different purpose, whilst others represent scenes from the heathen mythology, or subjects strangely at variance with the Christian religion. Subsequently, many remarkable works of art have been collected within the walls, and the building is now one of the most valuable museums in Italy. Externally, it is extremely plain, consisting of a range of pilasters and arches; the mouldings of the latter springing from busts or corbels, immediately above the capitals. It is entered on the side next the cathedral by two plain doorways. In the "Architecture Toscane" a work we have frequently referred to in these pages, the plan is drawn rectangular; but Messrs. Cresy and Taylor represent it slightly varying from that form: we believe the last is correct. Piers, composed of clustered pilasters standing upon pedestals, support semi-circular arches, busts being again inserted at the springing. The pedestals stand upon a step, upon which rises a dwarf wall. But the most curious part of the building consists in the filling in of these arches, which are enriched with mullions and tracery, resembling that of good Gothic examples. It is of the geometrical decorated character, but the mullions, for so we must term them, have bases and capitals, imitated from those of the piers. The Campo Santo formed one of the subjects in the controversy, before mentioned. Mr. Smirke, in the *Archæologia*, vol. xv., having alluded to the building, as indicating the early use of Gothic architecture, Sir H. C. Englefield, Bart., gave arguments to prove that the tracery was later in date. Mr. Smirke re-asserted his opinion that the building had not undergone any alteration, and argued from the tower of the church of Il Frari, at Venice, of which he gave a drawing, but which has since been shewn to be of the date 1361, and not by Niccolo da Pisa, like the body of the church, that it was not unusual to have circular and pointed arches in the same building. He believed that the tracery and window openings in the Pisan building, were of the same date, but that there was no stained glass. The careful examination of Mr. Arthur Taylor, however (*Archæologia*, vol. xx.), placed the matter in a different light. He discovered that, whilst the main portion of the building was from quarries in the neighbourhood of Pisa, the tracery was of Carrara marble. The Gothic portions had certainly been added, for the tracery and the half pillars, or responds, were not connected with the piers, whilst the capitals were unconnected with the adjoining mouldings of the pilaster. The Gothic capitals, also, were more delicately worked, though freely imitated from those of the pilasters. In reference to the date of those additions, he referred to an inscription, recording the erection of certain marble windows in 1464. It had been supposed that Gothic architecture was discontinued at an earlier period, but the date was, at all events, when the use of large panes of stained glass was practised. In the *Archæologia*, vol. xxiii., Mr. Sidney Smirke took up the subject, and endeavoured to show that, there *were* circumstances of construction, tending to prove the tracery part of the original design. Judging from inscriptions, he thought that, the building being erected by Giovanni da Pisa, in 1283, Antonio Pisano, in 1464, completed the work with four arches, probably doorways, and twenty-eight windows; on which occasion some old materials were used again, therefore that the first architect intended to fill the openings with tracery, and stained glass. As he had discovered a small piece remaining, he considered that there must have been glass, and that this glass was subsequently removed. The tracery corresponded in style and date with English examples, and the design of Sienna Cathedral, attributed to Giovanni, was Gothic, and was executed by his pupils, Agostino and Agnola, in 1333. Notwithstanding these arguments, which we have been induced to give, because some importance must be attached to them, it seems to be now conceded that the tracery is of late date, and the original intention of glazing with stained glass was afterwards abandoned. The richness of the varied tints has been lost, but in the effect of light and shade, and in the beauty of the materials, it is thought that few buildings can surpass the Campo Santo of Pisa. Several volumes might be filled with illustrations of the fine collection of works of art, which the building contains. Heathen tombs were collected, and used as Christian monuments, and works of art of all kinds have been deposited from every part of the Pisan territory. The late *conservatore*, Lasinio, still further increased this collection, and through his exertions, which the government do not seem to imitate, many beautiful works of art were preserved, particularly during the French invasion, which left its traces in so many of the buildings of Italy. Several capitals from the cathedral and campanile are here deposited; they were removed during the repairs of those buildings. In England, such fragments are carted away by the dealer in old materials, or become the perquisites of the workmen, an instance of which amongst a hundred others, occurred at the restoration of the Temple Church. Had there been a few square yards of ground and a shed, anywhere, to receive such fragments, a valuable collection might ere this have been formed, of objects, now irrecoverable, and the arts would have reaped a great benefit.* The ambulatory of the Campo Santo is paved with tomb stones, having figures upon them in low relief, and the costumes of the different classes of citizens being represented, the collection is one of high interest. The walls are covered with subjects in fresco, which have of late excited some interest in England; they consist of subjects from the Holy Scriptures, and the lives of the saints; the earliest were by Giotto. Connected with the ambulatory are one or two small chapels, which do not require further notice. The churches of Pisa are all most important examples in the history of Italian architecture, and it is curious to observe the influence of the type of the cathedral, of which we meet with so many examples in England. Thus, the very curious church of San Paolo a ripa d'Arno is a copy of the cathedral, on a reduced scale. It has three ranges of arches, similar to those of the cathedral, and by many it has been supposed, that the latter building was taken from *it*. There is much obscurity about its date: that generally ascribed to it is 1100.—Sta. Maria della Spina, of which Mr. Knight has given a good illustration, stands on the banks of the Arno, and received its name from its possessing, as was said, a spine from the Saviour's crown of thorns. It was originally an oratory at the foot of a bridge. Its plan is a simple oblong, with an extension at the east, as a chancel. This portion is probably a later addition, and upon it are three spires. It is believed that the building was commenced in 1230, Giovanni da Pisa being the architect. The side next the river, and other parts are in their original state, but great alterations were commenced in 1323, in which the building gained its present appearance, which is that of a beautiful shrine crowned with pinnacles and tabernacles, with ranges of beautiful statues, said to be the work of Giovanni da Pisa and his pupils. Giovanni is said to have had the work of the Campo Santo given to him in consequence of his success—an instance of the identity of the pursuits of architect and sculptor, during the middle ages. The principal front has three gables curiously arranged. The lower story has round arches, inclosing work of a Gothic character; and above are wheel windows with the pinnacles and sculpture. It was in progress during great part of the 14th century, and, when completed, was considered a miracle of art. The upper portion is all Gothic, of white marble, and most delicate workmanship; and if the sculpture appears somewhat profusely used, we must recollect the peculiar ability and taste of the Italians for this species of embellishment.

DRUIDICAL TEMPLES.—The Rev. E. Dukes, F.S.A., has published a volume to elucidate the temples of Abury and Stonehenge.

* See p. 409, *ante*.

† Murray's "Handbook for Travellers in Northern Italy."

* On this subject, the papers "On the Preservation of National Antiquities," in Vol. III., may be referred to.

PORTLAND CEMENT.

THE FAILURE ON CORNHILL.

We have taken some pains to learn if the recent failure should weaken our opinion of the material in question, or throw any slur upon the manufacturer of that particular specimen, and are disposed to think it should do neither. It appears to have resulted from a departure from the usual mode of manufacture, made with a view to meet a wish on the part of plasterers to have a cement that would set fast, and not occupy much time in working.

Portland is an artificial cement, composed of chalk and clay in certain proportions; which ingredients being ground together in water are run into a reservoir, where they are allowed partially to dry. After being further dried by stove heat, the mixture is ultimately burnt in kilns, from which it is delivered in two conditions, viz. perfectly burnt and not perfectly burnt. The proper admixture of these two qualities of the cement mainly affects its nature; and it appears that in the specimen under notice, too much of the unburnt, or quick setting part, was introduced.

Portland cement differs from what was used some time ago as "Frost's cement" only in the proportions of the materials employed and the manipulation,—upon which, indeed, its goodness or otherwise entirely depends.

General Pasley in his work on limes and cements, when speaking of Frost's cement, objects to the washing and long drying practiced, as both very prejudicial to the strength of the cement. He further thought that the chalk predominated too much over the clay, and recommended certain proportions of his own. Whether or not the Portland cement more nearly approximates these than Frost's we may take an opportunity to investigate.

PUDDLE.

Sir,—Your correspondent in seeking information respecting puddling, omitted to mention the depth of the proposed reservoir, as upon that would depend the strength or thickness of the puddled wall.

To render the dam head water-tight, a puddled wall should be carried up at the back of the masonry, and in connection with the puddled lining of the reservoir, in a similar manner to which the side walls of docks are rendered impervious to water, and from two to three feet thick, or more, according to the altitude; and the puddling should proceed in courses as the masonry proceeds. The interior slope also from the dam-head, I would recommend to be lined with puddle, as an additional security. The roots of trees should be carefully grubbed up before the puddled lining is laid, or otherwise they may shoot and penetrate through it, and allow the water to escape. Some judgment is requisite in the selection of proper materials for the construction of a puddle, for instance, neither sand, granite, nor chalk would separately form a puddle, but all or either of them mixed with even a small proportion of clay, and well wrought, may be made into an excellent puddle.

It was formerly contended that clay alone was the most suitable material, but modern practice has discovered that clay mixed with a small proportion of sand, gravel, or chalk, or a compound of all these, constitutes the best puddle. Some persons use common mould, wood or coal ash, brickdust, &c., and this mixed with clay, when sand or gravel cannot be procured, will make a durable lining for water works.

Clay of a soft or soapy nature is very apt to slip; and if too stiff and hard is wrought with difficulty, and is very liable to crack afterwards by exposure to the atmosphere. Mr. Telford (the late eminent engineer), in describing puddle, says: "It is formed by wetting earth to fluidity in an inclosed space, and then turning and working it with a shovel, until it has acquired that alluvial state which experience has shewn to be requisite; it is then left to settle; and when the water has been evaporated from the sediment, a similar stratum of alluvial earth is superadded from time to time, and thus rises with the canal banks, in which it forms a concealed wall of earth, impermeable by water; in effect it prevents leakages through a canal bank, or any dam or other earthwork which requires that kind of precaution." I cannot close this article without adding extracts from the specifications of two of our most eminent hydraulic engineers, the late Mr. Telford and Mr. Walker, in allusion to this subject. The former says: "The whole of the puddles are to be composed of a proper mixture of clay and sand, or gravel, not exceeding the proportion of one of the latter to three of the former (unless the engineer shall direct to the contrary), to be thoroughly worked by cutting and heading in courses not exceeding eight inches thick when laid on, so as to be, when completed, perfectly water-tight, and all joinings must be carefully united."

The latter says: "The canal in excavation, when not in clay, is to be lined with a two-feet thickness of puddle, as shewn on the cross section. In the embankments, when not in clay, the bottom of the canal is likewise to be lined with a three-feet thickness of puddle, meeting that at the sides, as shewn in the cross section. When in clay, side puddles are to be made one yard in thickness, carried up from the clay, the surface of which is to be first turned over to the depth of ten inches, and perfectly worked. Hoping these remarks may prove satisfactory to your correspondent,

I am, Sir, &c., B. Baylis.

Merthyr Tydfil, Sept. 7, 1846.

FOREIGN ARCHITECTURAL AND COLLATERAL INTELLIGENCE.

Berlin.—Amongst the latest establishments of that city, the *Polytechnic Society* occupies a prominent place. It contains now 800 regular paying members (a great number for a city of merely 300,000 people). They applied for a site to erect a building of their own, first to government, and a fine plot in the Thiergarten, near the Brandenburg Archway, was fixed upon. Some impediments, however, having come across, another site, near the Royal Building School (*Königliche Bau Schule*), in the very centre of the town, has been selected. Its price, however, is considerable—80,000 dollars; and as the society intend, hereafter, to establish an especial Polytechnic school (what we would call *college*), an aggregate capital of 200,000 dollars will be required.

The new hôtel of the Secretary of War, which, like a princely mansion, is raising in Leipzig-street, will be ornamented with a number of brass statues, representing the different *corps* of the Prussian army. In fact, the number of statues in Berlin—be they of metal, stone, or even stone-cement—is so much augmenting, that it can be said of the Prussian capital now, what Cassiodorus said of Rome of the Emperors, viz. that "it contained two kinds of personages nearly equally numerous—living beings and statues."

"*François de Hollande*"—*a hitherto unknown Architectural Author.*—Count Raczynski, of Berlin, previously known by his writings on modern art, has, on searching the library of the Jesuits at Lisbon, discovered the MSS. of the above artist, a contemporary and friend of Michael Angelo and other great men of that period. F. de Hollande is called in these MSS. *architecte et enlumineur*. Amongst them is a dialogue which took place at Rome between F. de Hollande, Michael Angelo, Victoria de Colonna, and other celebrated personages of the time. Another very curious work is an official report made to King Sebastian "On the utility of the art of design in a Christian republic, as well in time of peace as in war." The following passage, extracted from a chapter—on the utility of design to a monarch, might nigh induce us to believe, that F. de Hollande had some glimpses of the discoveries of Lavater and Gall even in the 16th century. "One of the reasons why the king ought to know to draw, is, that thereby he will become aware of the character of the persons he has to employ, as exhibited in their physiognomy. This will enable him—a thing, certainly, very useful and important—to distinguish in his council, according to their features, the men whom he has to choose as viceroy of India, or for an ambassador, &c. He will also thereby avoid the making a man a captain, who is but suited for a groom." Count Raczynski has travelled over the whole of Portugal in an artistic point of view, viewed all their important sites and monuments, and states, that "the love of the *beautiful* and the taste for arts have been spread, at different epochs, throughout the whole of the realm."

Engineer, Mr. G. Potenti, of Pisteja.—This gentleman, a professor in a small Roman town, has raised himself to great celebrity as a railway *mapper* and writer. After three years' travels through Europe, Mr. P. has just completed "Mappe routière historique et statistique des chemins der fer, et autres voies de communication exploitées à vapeur, du milieu de l'Europe."* It contains—all railways completed, building, or projected; all courses of steam-boats, with their periods of arrival at the sea, or rivers and lakes; an account of steam-engines of the atmospheric system, of lines and rails. The map contains, moreover, several very interesting tables, viz.:—a comparative review of all lines all over the world in 1845; a survey of the most important rail systems in Europe; a survey of the ascent and fall on European and North American railways; a table on the gradual improvement of steam-engines since 1825, in regard of their power, speed, and amount of fuel used, &c.; a survey of the smallest radii of the average bent of lines; a table on the average speed of trains—a comparative table, in fine, of the most general geographical and railway measures.

A curious Sepulchre.—Count Sternberg, the celebrated German geologist, has ordered in his last will, that his body shall be inclosed in the hollowed-out trunk of one of those gigantic antediluvian palm-trees, which have assumed the hardness of the most compact sandstone. We are not aware, whether his desire has been already carried into effect.

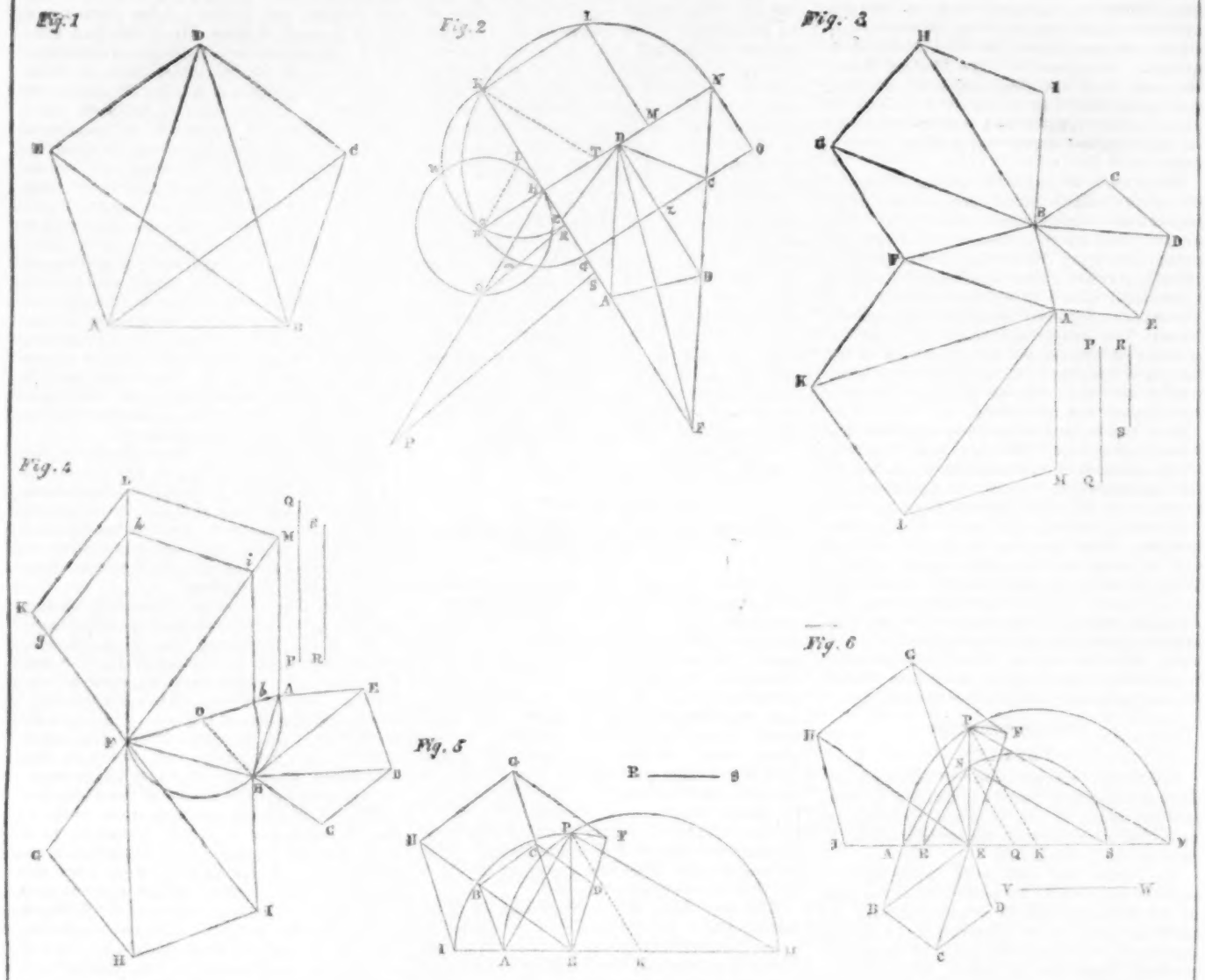
Prague, Austria.—The corporation of this ancient city have restored the venerable chapel of St. Mary, adjoining the *Teyn* church, and placed therein the statues of Cyrillus and Methodius (Bohemian apostles), made by Mr. Marx of Tuscan marble. They are sterling, well executed pieces of statuary. The pedestal, of Gothic style, is made of red Bohemian marble, after the designs of Architect Mr. Herrmann. In it a bronze tablet will be sunk, representing deeds of the life of the above two saints. The chapel contains many works of the fifteenth and sixteenth centuries, as a metal font of the year 1414, also properly restored now. A Gothic altar, made after the designs of Mr. Hellich, will be adorned with a carved in wood and gilt statue of the Madonna of the fifteenth century. The next improvement to be made in Teyn church, by order of the Prague corporation, is the restoration of a very remarkable pulpit; that of an altar of St. Luke; the lifting from out of the ground of several interesting old obituary tablets, &c. On the chief altar will be placed the remarkable old wood crucifix, described by Professor Wach in his history of Bohemian wood carving.

Count Giovanelli, Lord Mayor of Trento.—The death of this patriotic citizen (Jan. 1846) is much lamented throughout Tyrol. After having occupied the above situation for several years, he eventually succeeded in making that dismal, dark place of the once council, resemble a clean and cheerful Dutch city. The aqueducts, constructed by his suggestions, pour an abundance of water out of marble troughs. Where once large spaces of rubbish and sand were to be met with, smiling greens with plantations of trees are to be seen. In the same way Mr. Giovanelli reformed the paving to a great degree of symmetry and solidity, built public slaughter-houses, erected a new town-hall, perfectly cleansed and regulated the Place before the cathedral; and even the Campo Santo of Trent, with its Doric columns, is his work. J. L.

Chelmsford Church.—A Chelmsford paper, quoting, it now appears, from the *Essex Herald*, a paragraph relative to "the old church in this place," has led to the mistaken idea that the roof of Chelmsford Church has fallen into a state of decay, whereas the paragraph related to Halstead old church, the church at Chelmsford having "never been in a more substantial or better state" than at present. We are indebted to the *Essex Herald* for the correction of this error.

* Brussels, Vandermaelen. The same publisher has also brought out another work of Professor Potenti, on the Belgian lines; both to be had of any foreign publisher in London.

GEOMETRY OF THE PENTAGON.



THE GEOMETRY OF THE REGULAR PENTAGON.

Shewing the Method of its Construction, and its Conversion into an Equivalent Triangle, a Rectangular Parallelogram, a Square, and a Circle; together with the Method of Adding, Subtracting, Multiplying and Dividing regular Pentagons.

The regular pentagon or five-sided right lined figure, being of the greatest utility in the erection of various civil and military structures, it might reasonably be expected that its nature and properties would be perfectly understood by architects, engineers, and other practical individuals; and there can be no doubt but such is the case, in so far at least as its construction and mensuration are concerned; but with regard to its conversion into equivalent figures of different forms, and the other manipulations mentioned in the preamble, it may very justly be questioned if such a familiar knowledge of this very common and simple figure has yet been acquired, and the more especially so, as there is no system in our language in which those and similar operations are pointed out, or even hinted at.

Examples of the conversion of areas have, it is true, appeared in several of the late numbers of The Builder, but they are only to be regarded as particular cases of the general theory, and the attentive reader will readily perceive that the subject of the present paper is another application of the same principle, and one which is well adapted for displaying its efficiency, in the resolution of many curious and interesting problems, peculiar to architecture and several kindred branches of the constructive arts.

The delineation of the pentagon is effected in various ways, all of them simple and well-known; Euclid has given a very elegant and ingenious method of doing it, in the fourth book of his elements of geometry, and a much simpler method is pointed out by Ptolemy in the first book of his Almagest; but both these methods of construction, as well as the general process given by Renaldinus for all polygons, have reference to the inscription and circumscription of the figure in and about a circle; this, however, is not the object of the present inquiry, for it is not a given circle, but a given straight line, which is here supposed to constitute the datum on which the construction depends.

The methods of describing a pentagon upon a given straight line are also various, some of them very simple in practice and rigorous in their principles, while others are only approximative and difficult to apply. It is not, however, intended in this place to notice the several means of obtaining the same end: the main point is, to select from amongst many that method which is the easiest in practice, and the best adapted for general purposes.

The geometrical property, *that all the inward angles of every right-lined figure, when taken together, are equal to twice as many right angles, wanting four, as the figure has sides*, furnishes the easiest and most expeditious method of constructing the pentagon when the proper angular instruments are at hand, and the construction by this method will be correct in proportion to the delicacy of the instruments employed, and the skill and dexterity of the operator.

Since the pentagon has five sides, all the inward angles, or those contained between the adjacent sides of the figure, when taken two and two, will be expressed by the following theorem, viz:—

ten right angles — four right angles = six right angles;

and since a right angle contains 90 degrees, all the inward angles of the figure, five in number, will contain $90 \times 6 = 540$ degrees, being 108 degrees for each angle; for $540 \div 5 = 108$. This result distinctly indicates the method of constructing the pentagon, for we have only to make an angle of 108 degrees at each extremity of the given line, to obtain the directions of the two adjacent sides; then, by setting off in each of these directions a distance equal to the given line, the other two sides of the figure will from thence be readily determined.

This method, however, admits of considerable modification for practical purposes, and under such modification it is more readily applied in any particular case; the mode of construction is as follows:—

Let AB (fig. 1.) be the given straight line, on which it is proposed to construct a regular pentagon. At the extremity A of the given line AB, make the angles BAC, BAD and BAE, respectively equal to 36, 72, and 108 degrees, a process that can be performed with one application of the semicircular protractor. And, in like manner, at the extremity B of the given straight line AB, make the angles ABE, ABD, and ABC, respectively equal to 36, 72, and 108 degrees; then will C, D, and E, the points in which the several lines are found to intersect each other, be the angles of the pentagon. Draw the straight lines CD and DE, and ABCDE is the regular pentagon sought.

It would extend the present paper to too great a length to give a demonstration of the several constructions; it must therefore suffice to detail the steps of the operation in each case, and leave the demonstrations, either for exercise to the readers of the journal, or to their candour in taking it for granted, that the principles on which the operations depend are true. In the present instance, however, the truth of the construction is self-evident; and it is so

easy by this method, and so well adapted to practice, that operatives of every class will find it greatly to their advantage to employ it.

Having thus exhibited a simple and practical method of describing the pentagon, we have now to shew the method of its conversion; first, into a trapezium; second, into a triangle; third, into a rectangle; fourth, into a square; and fifth, into a circle. The figure by which all these conversions are represented must necessarily be very complicated, and might have been separated into several subordinate parts with considerable advantage as regards distinctness; but wishing as much as possible to avoid a multiplicity of diagrams, the whole is condensed into one figure, as under.

Let ABCDE (fig. 2.) be the given regular pentagon, of which the sides are AB, BC, CD, DE, and EA respectively, and which it is required to convert successively into the several figures specified above.

Draw the diagonals AD and BD, dividing the given pentagon into the three isosceles triangles ADE, ADB, and BDC, of which ADE and BDC are equal and similar in every respect. Extend the side BC directly forward to N, making CN equal to CB or CD, the side of the pentagon, and draw DN; then is the triangle CDN equal to the triangle BDC, or ADE; and consequently the trapezium ABND is equal to the pentagon ABCDE; for the triangle CDN, which is added to the pentagon on the side CD, is equal to the triangle ADE, which is separated from it by the diagonal AD.

Produce CB and EA, the sides of the given pentagon, to meet each other in the point F, and draw DF; then is the triangle FDN equal to the pentagon ABCDE, for it is equal to the trapezium ABNP, and it has just been shewn that the trapezium and pentagon are equal, so also are the triangle and pentagon.

Bisect the diagonal BD perpendicularly in the point Z by the straight line CG, and from the point N let fall the perpendicular NO, meeting GC produced in O, and complete the rectangular parallelogram GHNO, which will also be equal to the given pentagon ABCDE; for it is obviously equal to the trapezium ABND, and it has been shewn that the pentagon and trapezium are equal.

On the point H as a centre, with HG as a radius, describe the circular quadrant *Gmn*, meeting NH produced in *n*, and making H*n* equal to HG, so that N*n* is equal to the sum of the sides of the rectangular parallelogram GHNO extended in one line. Bisect N*n* in T, and on T as a centre, with N*n* as a diameter, describe the semi-circle *n*KN, meeting GH produced in K; then is HK a mean proportional between HG and HN, the sides of the rectangle GHNO. Consequently, the square, HKLM, described on HK, is equal to the given pentagon ABCDE, for it is equal to the rectangular parallelogram GHNO, and it has been shewn that the pentagon and rectangle are equal.

From the point H draw the straight line HP, making any convenient angle with HF, and set off HP proportional or equal to the number 7·1, or some multiple or submultiple of it, and make HQ equal to HK. Similarly, on HF set off HS proportional or equal to the number 2·26, or the same multiple or submultiple of it that HP is of 7·1, and join PS; then through the point Q, and parallel to PS, draw the straight line QR, meeting HF in the point R, and HR will be the diameter of a circle whose circumference is KH. Bisect KR in I, and on I as a centre with the radius IK or IR, describe the semi circle RWK intersecting H*n* in *c*; then is *c*H the radius of a circle, HQW, of equal area as the given pentagon, ABCDE; this is obvious, for by the principles of construction it is equal to the square HKLM, and it has already been shewn, that the pentagon and square are equal. So much then for the conversion. Now for the other operations.

And first, to add pentagons together retaining the form; that is, to constitute a given pentagon that shall be equal in area to two or more given pentagons; or which is the same thing, to convert two or more regular pentagons into a single one containing the same area.

Let it be supposed in the first place, that there are only two given pentagons, and let the straight lines, PQ and RS, fig. 3, denote their sides respectively, PQ being the side of the greater, and RS the side of the lesser. Upon the straight lines PQ and RS as the base and perpendicular, construct the right-angled triangle ABF, right-angled at B, and having AF for its hypothenuse; then, upon the sides AB and BF, which form the legs of the right-angled triangle ABF, constitute by the method shewn in fig. 1, the regular pentagons ABCDE and BFGHI; and in like manner, upon the hypothenuse AF, constitute the regular pentagon AFKLM; then shall this last be equal to the sum of the other two. This is obvious, for by the property of the right-angled triangle, the square of AF is equal to the sum of the squares of AB and BF; but the areas of similar polygons are as the squares of their like sides, therefore, the pentagon AFKLM is equal to both the pentagons ABCDE and BFGHI. If a third pentagon were to be added, it is only necessary to place it in such a manner, that one of its sides shall be at right-angles with a side of the large pentagon just found; then another pentagon similarly constituted upon the hypothenuse, will be the pentagon that is equal to the sum of those given; and so on in the same manner to any extent at pleasure.

In the second place, it is proposed to shew, in what manner one regular pentagon can be subtracted from another, the remainder still retaining the form of a regular pentagon; or, which is the same thing, to convert the difference between two given regular pentagons into a regular pentagon.

Let the straight lines PQ and RS fig. 4, denote the sides of the given pentagons, PQ being the side of the greater, and RS the side of the lesser. Upon AF, which is equal to PQ drawn in any convenient direction, constitute the regular pentagon AMLKF, which will be that from which the other given pentagon is to be taken. At the point F set off on FA and FK respectively, the parts F*b* and F*g*, each equal to RS, the side of the lesser given pentagon, or that which is to be subtracted, and complete the pentagon F*bihg;* then is the intermediate space AMLK*ghib* the difference sought, and that which has to be converted into a pentagon.

Bisect the side AF in O, and on O as a centre with AF as a diameter, describe the semi-circle ABF; then on the point F as a centre, with the distance F*b* as a radius, describe the circular arc *b*B, intersecting the semi-circle ABF in the point B, and draw AB, BF, and ABF is a right-angled triangle, the side AB being that of a pentagon, which is equal to the difference of the given ones, FB being the side of the lesser, or that which is subtracted.

Upon AB and BF construct the pentagons ABCDE and BFGHI, and the first of these will be the pentagon sought, or that which is equal to the difference between the other two, the second being the lesser of the given pentagons, and equal to F*bihg*. The truth of the construction is manifest from the property of the right-angled triangle, combined with that other most elegant and important property, *that the areas of similar polygons, are to one another, as the squares of their homologous sides.*

The multiplication of the pentagon, or the determination of a regular pentagon, that shall be equal in area to any proposed number of times a given pentagon, requires a process somewhat different, but it is nevertheless very easily performed, as follows, on the supposition that the given pentagon is to be multiplied by 3.

Let the straight line RS fig. 5, be the side of the given pentagon, for which one is to be found that will contain its area three times. Draw the straight line IM in any direction, and of any convenient length at pleasure. Assume any point E in the straight line IM, and make EA equal to RS. Upon EA construct the pentagon ABCDE which will be that whose side is given. Make EM equal to three times EA, and upon AM as a diameter and centre K, describe the semi-circle APM intersecting the perpendicular from E in the point P; then is EP the side of the pentagon required. Produce EA and ED the adjacent sides of the pentagon and make EI and EF each equal to EP. Complete the pentagon EFGHI, and it will contain ABCDE three times. This is manifest, for by the principles of construction and the property of the circle, the square of EF, which is equal to EP, is three times the square of EA, and the areas of similar polygons are proportional to the squares of the like sides.

The process of dividing a given pentagon into any proposed number of equal pentagons is very easy, and is effected in the following manner. Let the straight line VW, fig. 6, be the side of the proposed pentagon, which is to be converted into any number of equal pentagons, say three. Draw the straight line IM in any direction, and of any convenient length at pleasure, terminated at I but infinite towards M. From the point I set off towards M the part IE equal to VW the side of the given pentagon, and on IE describe the figure EFGHI, which is that proposed to be divided. At the point E, and in the direction EI, set off ER of any magnitude at pleasure, and make ES equal to three times ER. On RS as a diameter, and Q as a centre, describe the semi-circle RNS, intersecting the perpendicular EP in N, and draw NR, NS. Make EP equal to EF, the side of the given pentagon, and through P draw PA, PM respectively parallel to NR and NS, and meeting IM in the points at A and M; then is EA the side of the pentagon sought. Upon EA describe the pentagon ABCDE, and it will be equal to one-third of the given pentagon EFGHI, as is manifest from the mode of construction itself.

Note.—It may probably be somewhat recommendatory of this method of describing pentagons, to state, that all the figures in this paper have been constructed in this way, and it has been found to apply with almost the same facility and accuracy as the description of a circle with a pair of compasses; it is therefore confidently recommended to practical men, in consequence of its very easy application. T.

THE MAGISTRATES AND THE OFFICIAL REFEREES.

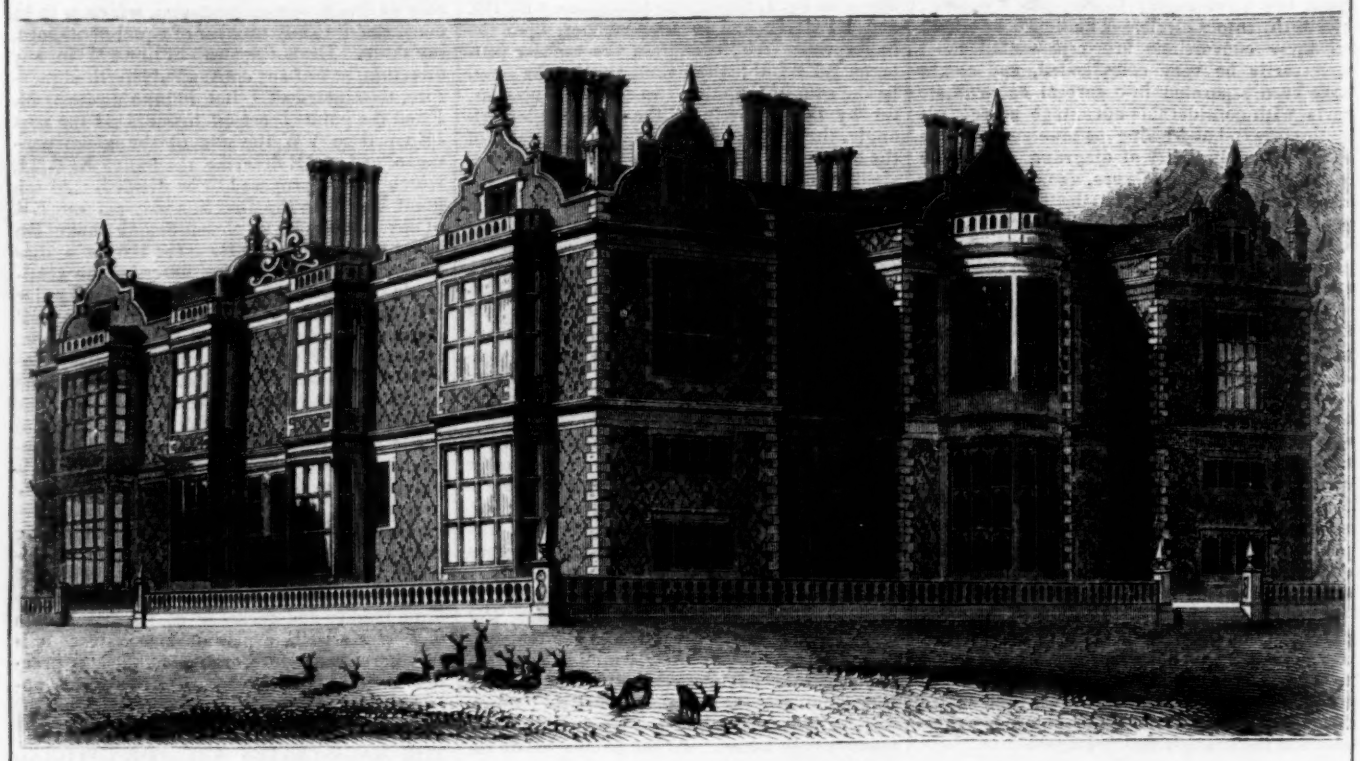
Sir,—Allow me one word more on the subject of magistrates' decisions on the Metropolitan Buildings Act. You advise me, in your note at the foot of my last letter, that I had overlooked the 77th section of the Act. I had not, however, overlooked it, but had, on the contrary, looked it over very carefully, and have done so again, but I cannot bring my mind to see that by that or any other section of the Act, the magistrate is authorized to decide doubts or differences between parties as to the effect of, or the construction to be put upon, any of its provisions, rules, and regulations.

In such a case as Badger *versus* Dean, I conceive that the magistrates' duty is very clear; and it is simply this:—to ascertain whether the work has been done; and if so, the builder's reason for refusing to pay the fees demanded; and upon its being made known to him, that the builder offers a single fee only, whilst the surveyor claims a double fee,—then at once, seeing it to be a question as to the effect of Schedule M., to require of the surveyor to produce the award or certificate of the Official Referees, confirmatory of his claim. This course, I conceive, would be easier for the magistrate, fairer to the parties concerned, more in accordance with the law, and moreover, more beneficial to the public.—I am, Sir, &c.

London, Sept. 7. Συνεργος.

East Cranmore Church.—The ancient little church of East Cranmore (the door-case of which, still preserved, is supposed to be of Saxon workmanship), having become much dilapidated, was taken down in April, 1845, and an entirely new and enlarged structure, from a design by Mr. T. H. Wyatt, has been erected on the old site. On the 18th of August, the new building, dedicated like the former to St. James, was consecrated by the Lord Bishop of the diocese. *Felix Farley* says, "The church, which is of the early decorated character, with a tower over the porch, surmounted by a broach spire, is substantially built of Doulting freestone, both within and without, and is fitted with spacious open sittings of oak, with an open hammer-beam roof of the same material, supported on corbels of stone, richly carved. The space around the altar is paved with encaustic tiles. The communion-table and rails, reading-desk and pulpit, are of carved oak, with chairs of the Glastonbury pattern."

VIEW OF CREWE HALL, CHESHIRE.



VIEW OF CREWE HALL, CHESHIRE.

Crewe Hall was erected by Sir Randulph Crewe, an eminent lawyer, in the reigns of Elizabeth and James the First. He was appointed Lord Chief Justice of the Court of King's Bench by the latter sovereign, and is celebrated for his uprightness—having been dismissed his office after only two years' possession, for not concurring in the proceedings of King Charles the First in levying money without the authority of Parliament.

The house was commenced in 1615, and was finished in 1636; the name of the architect is unknown. The plan of the building is a perfect square, each side being 97 feet in length; three sides are broken by the projection of the porch and bow windows. The materials used in its construction are red brick, with greyish vitrified bricks disposed in diamonds throughout; the porch, the entablature, windows, quoins, and balustrades are of stone.

Crewe Hall is undoubtedly one of the finest remaining examples of the English branch of the Italian cinque-cento architecture. The interior presents an extraordinary variety of decorated ceilings, enriched plaster-work, and carved wainscotting. The view shews the south and west sides; in the centre of the latter, on the ground floor, is seen the window of the chapel. It may here be observed, that the chapel attached to the domestic buildings of the reigns of Elizabeth and James the First, were generally in the Gothic style (and this, although the buildings to which they were attached might be Italianized), of the low character of Gothic which then prevailed, but unmixed. The builders of that period, though they thought the "new manner" of building most adapted to domestic architecture, seem to have considered the Gothic as exclusively ecclesiastical.

Crewe Hall was garrisoned by the Parliamentary troops in 1643: the Royalists, under Lord Byron, laid siege to it the same year, on the 27th of December, but were beaten off, with the loss of sixty killed and many wounded. The garrison, wanting victuals and ammunition, yielded it up the next day. It was retaken by the Nantwich troops the year following.

The building has been lately subjected to a very extensive repair and restoration, under the superintendence of Mr. Edward Blore.

Fig. 1. Sketch of the upper entablature and balustrade.
Fig. 2. The lower entablature.
Fig. 3. The plinth mouldings.
Fig. 4. Part of ornamented gable.

C. J. Richardson.

WESTMINSTER BRIDGE.

Workmen continue busily engaged in the removal of the upper part of the structure, in those parts where the arches have failed, but whether or not any really competent person is directing the operations, we cannot say. Our impression from a recent examination is certainly in the negative; and we shall not be surprised, if the doctoring be continued much longer, to hear the bridge declared unsafe for traffic even while the new bridge is building.

The interesting pamphlet on the subject, by Sir Howard Douglas, M.P., which has reached a second edition,* shews that since 1838, when the repairs were first commenced, no less than one hundred and thirty-five thousand five hundred pounds have been expended in vain attempts to prevent the damage from extending, or more than a new bridge would have cost.

"There is a point," says the writer, "beyond which the settlement and declension of piers cannot proceed, without ruin to the adjoining arches; and those which, though distorted and unbalanced, still stand upon piers that have sunk considerably, obliquely, and unequally, and which continue, up to this time, to sink, cannot be far from that point. Some of the arches have obviously lost the balanced form; and had it not been for a peculiarity in the construction of this bridge, the masonry above the voussoirs being made to radiate in the direction of the arch stones (which, however, betrays some want of confidence on the part of the architect in the stability of the bridge) those arches must have fallen."

It appears to be generally admitted, that the bridge must come down: the best place for its successor is not so generally agreed upon. Sir Howard Douglas, in the pamphlet alluded to, points out Lambeth-stairs as the proper place for it; but as the honourable baronet's views are somewhat extensive and deserving of consideration, we give them at length, though we cannot agree wholly with them.

* "Metropolitan Bridges and Westminster Improvements." Boone, New Bond-street, 1846.

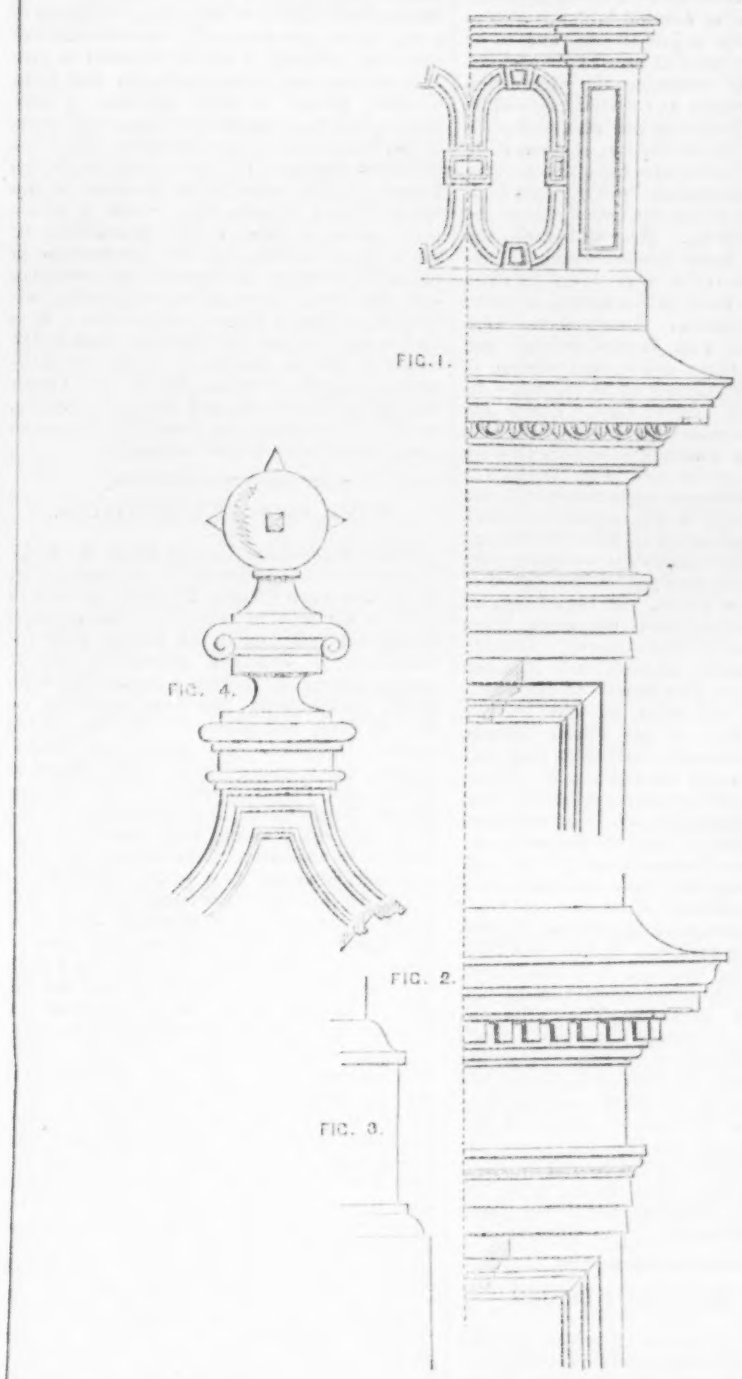
There must be very strong reasons, indeed, to justify the removal of the bridge far from its present position.

"A new bridge," says Sir Howard, "ca not be constructed on the present site with previously removing the old one; and t would involve an expense of at least 40,00 in erecting a temporary bridge, to avoid stopping altogether the communication between the Borough and Westminster whilst the new work is proceeding. There is no room for a new bridge between the Parliamentary palace and the present bridge, for these are already in contact; and the construction of a bridge any where below the present site, say from Maudesley's premises to Manchester-buildings, would occasion a very great outlay in providing new approaches. But if, leaving Westminster-bridge, in its present state, as a temporary communication, a new bridge were constructed from Lambeth stairs to the nearest part of the opposite bank, no expense for new approaches would be incurred, a direct communication with Westminster would be established, and a magnificent entrance into the capital formed at an interesting and venerable part. The river face of the new Parliamentary palace would be seen to great advantage; and, no longer disfigured and obscured on the other flank, when the distasteful structure which now defaces it shall have been removed. The edifice, standing gracefully and boldly out, would form a beautiful object upon the concave sinuosity of the river, extending thence to Blackfriars-bridge and Somerset-house, which, for this purpose, should be reclaimed from its present unwholesome and disgusting state, by the proposed embankment and terrace, which it were easy to shew is an interference with the state of the river much required at that part,—and thus that pestilential locality would be transformed altogether into a beautiful and highly embellished portion of the metropolis.

From the Westminster end of this new Lambeth bridge, a street should be opened to lead directly to Shaftesbury-terrace, Eaton and Belgrave squares, or to communicate with some part of that which is now being executed under the provisions of a late act, &c.; and another formed by the river bank, to Victoria Tower and Whitehall, passing between Westminster Abbey and the parliamentary palace.

Entering the court end of the town by this magnificent portal,—St. Margaret's Church removed, in conformity with the unanimous

DETAILS—CREWE HALL.



recommendation of a select committee, from the immediate vicinity of a splendid and ample place of worship, which requires not the aid of an adjoining church, and the relics which lie around that incongruous building exhumed —the western face of the quadrangle, by which, according to the present design, it is intended to inclose Westminster Hall, set back, to give greater space between it and Henry the Seventh's chapel;—Parliament-street widened, by removing the block of buildings between it and King-street,—Downing-street finished,—and the Board of Trade completed, a majestic communication would be formed, between the regal and parliamentary palaces; and if Whitehall-street may not, or cannot be straightened throughout, those buildings at least should be thrown back, which, on approaching Trafalgar-square, obtrude, more immediately on the left, to destroy its symmetry."

The recommendation of a select committee to remove St. Margaret's church we protest against strenuously: restore it,—improve it,—make it a fitting adjunct to the neighbouring buildings, but don't think of destroying it

THE WOODS AND FORESTS IN CHELSEA.

We inserted a letter, a fortnight since, respecting the manner in which "White Stiles," in the King's-road, had been arranged by the office of Woods, and expressed astonishment at the beggarly appearance presented. It did not occur to us at the moment that the building sites around the open space belonged to the crown, and had been leased to various builders by the office, or our astonishment would have been much increased. No private individual owning such a plot of land, and anxious to ensure the erection of good buildings upon it, would venture now-a-days to leave the centre space in so un-artistlike, not to say disreputable a condition, as the government authorities are about to leave White Stiles. It is seriously to be hoped, for the credit of the office, and the respectability of the neighbourhood, that some improvement of it will be immediately attempted.

Our correspondent on that occasion has since sent us the following remark:—

"Your commentary on my note, respecting White Stiles, Chelsea, is just, but it needs a word of explanation. The Chelsea Commissioners are known to have received, in the matter of the Hospital road, and the embankment road, great favour and consideration from the office of Woods, &c. It is understood that there are other considerable improvements dependent on the favourable consideration of the same board. Such being the case, it might be questionable policy to move at present in other matters; but there is another interest that you represent, viz. Public taste; which is outraged by such anomalous proceedings. W. D.

Chelsea, 3rd Feb. 1846.

THOMAS GRAY, THE AUTHOR OF THE RAILWAY SYSTEM.

The claims of Thomas Gray on the British public, as the man who first proposed, urged in all ways, and assisted in establishing "a general iron railway or land steam conveyance," have been alluded to by us several times. William Howitt, in the "People's Journal*" for September, has an eloquent "word for Thomas Gray." The introduction gives a picture of many earnest men filled with one great idea (or valuable or worthless), whom we, and all, have at different times met with; called bores by their short-sighted fellows, and doomed in nine cases out of ten to disappointment and neglect. He says:—

"About twenty years ago Mr. Thomas Gray, then, like myself, residing in Nottingham, used to be noted for what was considered a whimsical crotchet—namely, that a general system of iron-railways might be and ought to be laid down, on which trains of carriages drawn by locomotive steam-engines should run, and thus supersede the use of coaches, and also, in a great measure, canal-boats and stage-waggons for goods. This scheme, it was said, had for years completely taken possession of and absorbed Mr. Gray's whole mind; that it was the one great and incessant subject of his thoughts and conversation; that, begin where you would, on whatever subject—the weather, the news, the political movement or event of the day—it would not be many minutes before, with Thomas Gray, you would be enveloped with steam, and listening to a harangue on the practicability and immense advantages to the nation, and to every man in it, of 'A General Iron Railway.' Of course, Thomas Gray was looked on as little better than a madman, a crotchetty fellow, a dreamer, and builder of Spanish castles—one of the race of discoverers of the elixir of life, the philosophers' stone, and the perpetual motion. With one consent he was voted an intolerable bore. But to Thomas Gray it mattered not what they voted him, what they thought or said of him; a general iron railway for the kingdom was his only and enthusiastic theme. Anon, Thomas Gray and myself came in contact, and true enough he soon broke out ten thousand strong on this railway topic. Visions of railways running all over the kingdom, conveying thousands of people and hundreds of thousands of tons of goods at a good round trot; coaches and coachmen annihilated; canals grown over with duck-weed, or turned into cow-pastures; enormous fortunes made by good speculations; and people coming to dine with you from the Land's End, and going on to tea at John O'Groat's, were thrown out and talked of as sober realities that were to be."

Little thought the world that such things would soon come to pass.

"Thomas Gray saw all this before it existed; planned it, and recommended it by every means in his power. Repulsed by the great and learned, he was not put down; ridiculed, he was not abashed; neglected, he was not daunted; opposed, he still persevered. He omitted no scheme, he spared no exertion to convince the British nation that a new social revolution was at hand; that a new power was about to spring into existence; that a mine of wealth inconceivable, and a field of mechanic glory unrivalled, was lying at its very feet, and soliciting its acceptance. He had at this very time written a book detailing his views and his great plan, which was in its fifth edition, and about to enter its sixth."

Nevertheless, when the idea was admitted, when the truth became apparent, and the vision was a reality, Thomas Gray remained unno-

* A new illustrated periodical for all classes, published by Bennett, 69, Fleet-street.

ticed; and when he solicited employment on the Liverpool and Manchester line, *was refused*.

A pamphlet by Mr. Thomas Wilson first drew public attention to Gray's claim, who was then in a state of positive distress, and shewed how much was owing to him. Gray's book gives a map of direct lines, shews slides and turn-tables for turning carriages, and moving them from one line to another, and cogged wheels with notched rails, which have been recently exhibited as an improvement.

"These very turn-tables," says Mr. Howitt, "were secured by patent by some of the men who live on other people's ideas; and there was actually a law-suit between two parties for the priority of the invention—Mr. Gray having invented them, and published his plate of them long before." In short, his book, when we remember the time at which it was written, must be considered a very remarkable production, notwithstanding that the *Edinburgh Review*, when noticing it, treated the scheme as a grand farce, and said "the author was a madman, and ought to be put into Bedlam." We hope the public will now put him into a comfortable house instead.

RAILWAY JOTTINGS.

Amongst the lately established law precedents affecting the liabilities of parties concerned in railway proceedings, are the following:—An engineer or other officer of a company may, by his conduct, render himself personally liable to creditors of the promoters of a scheme, though the mere circumstance of his holding office in the company cannot render him responsible. On the other hand, as we have already instanced in one case lately reported, no engineer or other officer has power to bind a company by virtue of his office alone, though such a power may be expressly conferred on him. A director or promoter of a scheme may recover a proportionate contribution from each of the whole number of his associates for what he may have been called upon to pay; solvent directors not being liable at law, however, for insolvent; though, in equity, no regard is had to the original number of promoters, but only to the solvent members. All the promoters must sue and be sued for any breach of contract entered into by them with engineers, allottees, or others, so that it will generally be difficult to maintain proceedings on such contracts in a scheme which has no charter or Act of Parliament. Hence indiscretion in entering into such contracts by the general name of office, such as "Committee," "Directors," &c. Contracts in such cases ought to be made with a certain small number of persons as trustees. Other well-established principles affecting allottees, scripholders, &c., will have been already inferred from our occasional reports of cases.——In the *Rapport* to the French Chamber of Deputies on the *Projet de Loi* on the Northern line, is the following comparison of passenger fares in 1844, in centimes per kilometre:—

	1st Class.	2nd Class.	3rd Class.
England	19	12	7½
France	10½	7¼	5 7-10
Germany	9	6½	4
Belgium	7½	5 4-5	3 7-10

A new railway signal, patented by M. J. H. Dutton, was tried on the Eastern Counties Railway on Tuesday week. It is a simple enough contrivance of India-rubber and copper tubes running along the train of carriages, with mouth-pieces and loud whistles for the guards, drivers, and breaksmen to communicate with each other for the stopping of the engine and the simultaneous application of the breaks. The result is said to have been quite satisfactory. The expense for each carriage does not exceed 30s. The invention, as the *Mining Journal* remarks, has another claimant, Mr. John Goldring, of Chichester, who published a description of it in *The Spectator* of the 20th September, 1845, and transmitted a copy to the Board of Trade. Mr. Dutton, himself, appears only to claim some improvement in the insertion of the whistle relative to the mouth-piece.——The South Eastern, according to the *Mining Journal*, have determined that the extensive works for the widening of the Greenwich Railway, shall be proceeded with. The works comprise another viaduct, built on brick arches, the entire length of the Greenwich line, so as to provide for three additional lines of rails—one of which is for the atmospheric railway, and the other two for the North Kent line. Half the work, we are informed, is under contract, and the remainder will be let in the course of three weeks or a month. It is to be executed under the direction of Mr. P. W. Barlow, the company's acting engineer. The joint station at London-bridge is also to undergo important improvements, and to be enlarged to nearly twice its present dimensions. The contracts for widening the Greenwich line include the works at the station.——The Gravesend and Rochester line also, under the direction of the South-Eastern, is about to be converted into a double line, for which purpose works of some magnitude will be required, more particularly within the tunnel, where the canal must be filled up. Mr. Stephenson, the engineer of the South-Eastern Company, has surveyed the line, and it is proposed to close it about the first week in November, in order to accomplish the work. Arrangements have been entered into with Messrs. Grissell and Peto for the purpose, and a great number of hands are to be employed, so as to insure its completion within a given time. Under this arrangement it is calculated that the traffic will not experience an interruption of more than six weeks. In connection with these works it is also intended to proceed immediately with the line from Woolwich to Gravesend; and those to Maidstone, Chilham, &c., will next engage the attention of the company.——Amongst the railway bills which have passed the ordeal of committee is one which, for tunnelling, as observed by a contemporary, one would think had been planned by Pluto himself. It is the Manchester, Buxton, Matlock, and Midland Junction Railway. The length of the line is forty-two and a half miles, or, with its two branches, forty-five. It has fifteen tunnels, one of which is two and a half miles long, and their aggregate length six and a half miles, so that passengers will perform one-seventh part of their journey under ground. The estimated cost is, 1,650,000*l*., or 36,000*l*. per mile.——The total amount of the contracts for the high level bridge across the Tyne and viaducts is 304,500*l*. Messrs. Hawks, Crawshay, and Co.'s contract for the iron-work amounts to 112,000*l*. of this sum. Messrs. Losh, Wilson, and Bell, and Messrs. Abbot and Co., it is understood, will take part with the contractors in the execution of their work.——The Glasgow, Kilmarnock, and Ardrossan Railway Company have recently purchased the Ardrossan Harbour and Railway, from the Earl of Eglintoun and other proprietors, for 208,000*l*.——The *Commerce* states, that the unlucky viaduct of Barentin, on the Rouen and Havre Railroad, has nearly been levelled with the ground in consequence of an adjoining house having taken fire, the flames having communicated to the beams which support the arches of the viaduct.

GLASGOW SCHOOL OF DESIGN.

The annual distribution of prizes, awarded at the end of last session, when flattering reference was made to the exertions of the master, Mr. Macmanus, took place on the 17th, Mr. Leadbetter in the chair. The names of the successful pupils appeared in our advertising columns last week. Mr. Leadbetter, in the course of his address, shewed, as evidence of the importance of design in manufactures, with reference to some articles in metal, particularly stoves and fenders, that while, in the year from September, 1839, to September, 1840, the number of such articles registered was 392, in the following year they had increased to 813; in 1842 to 1306; in 1843 to 9835; by September, 1845, to 21,953; and by January, 1846, to 33,188, whilst a sum had been paid to Government in fees on the above mentioned class of registered goods of 99,564*l*.

Mr. Sheriff Bell addressed the meeting at considerable length.

The *Glasgow Citizen*, in a notice of the proceedings, has the following remarks:—

"What external evidence can the most civilized people give of their culture, or of their advancement, other than in the proofs which are presented to the eye of their taste in art? A national gallery of pictures is hardly a proof, as it is only available to a limited number in an age; for all the individuals composing a nation have not like facilities for seeing them, and educating their eyes by the examination of them. Time and distance are bars in the way, but the fact that such a gallery does exist, proves that the national taste is not totally careless of art; for the Government, which lays out money for such pictures, is supposed to present, to a certain extent, the concentrated reflex of the national mind. The architectural purity of the public buildings of a city, again, goes farther to prove the national taste, but is not all which is requisite to give that nation a claim to high culture. But when a whole people, in their clothing, in their houses, in the arrangement of their small plots of garden-ground, in the character of the decorations they have on their furniture, in the frames of their mirrors, in the paper on the walls of their houses, &c.; when a whole people show in these a nice appreciation of the elegant in form, and the harmonious in colouring, then we are forced to acknowledge that that people have arrived at a highly cultivated position in the scale of nations. It is such a position that the British Government means to put the nation in by the establishment of schools of design, and to such a position she will inevitably and necessarily arrive, or she will not grasp the means which have so freely been placed within her reach."

MEMS. FROM THE PROVINCES.

The differences of opinion about the mode of procedure to be adopted in the restoration of St. Lawrence Church, Reading, are said to be in a fair way of settlement, the question having been referred to the bishop, who recommends a complete restoration.——A marble monument to Miss Linwood, the celebrated needlewoman, has been executed by Mr. S. Hall, and placed in St. Margaret's church, Leicester. The inscription commemorates her needle-works as "Monuments of of Art and Perseverance."——The Roman station, Burgh Castle, at the confluence of the Yare and the Waveney, near Yarmouth, supposed to be the ancient Garianonum, and constituting one of the most perfect specimens of a Roman fortress now remaining in this country, was sold on Wednesday week to a Mr. Butcher, of Yarmouth, together with 27 acres of land surrounding its walls, for 1,500*l*. We learn that it has been purchased for Sir John P. Boileau, Bart., the President of the Norfolk and Norwich Archæological Society. The manor-house and farm have also passed into the same hands, and it may be hoped that the new proprietor of so interesting a relic, which, in truth, belongs to the public at large more than to any mere private individual into whose hands it may happen to pass, will regard it as an ornament to his property, and as such take a pride in its preservation.——The whole scheme for the formation of new markets at Hull has fallen to the ground, in consequence of the adverse votes of the majority of the town council.——A national school is to be erected at Fleetwood, as a testimonial to Sir Hesketh Fleetwood, the "Father of the Town," who converted it from a rabbit-warren to a thriving port, the growing rival of Liverpool itself. The first stone was laid a few days ago. Mr. R. B. Rampling is the architect.——The Health Committee at Liverpool have been instructed to consider the requisite number, and the most suitable sites for the erection, of additional fresh-water baths and wash-houses there. In the establishment at Frederick-street, while the number of baths for the quarter ending August 27th, 1845, was 6,116; in the corresponding period of 1846, it was 8,481. The receipts for the baths and wash-houses were, for the same period, in 1845, 131*l*. 4s., and in 1846, 145*l*. 2s. 5d., so that the establishments are in a decidedly thriving state.——The purchasers of Ford Abbey are said to be the leading bankers of Bristol, who had the estate knocked down to them at 50,100 guineas.——The Dowlais Iron Works employ about 6,000 people, amongst whom are 1,000 miners, and 700 colliers,—the former earning from 21s. to 25s., the latter 18s. to 20s. a week. At the works there are eighteen furnaces in blast.——The altar monument of the 15th century to Sir Thomas Vaughan, of Hergest, and his lady, Elena, in Kington church, has been of late extensively repaired and restored by Mr. Jennings, the sculptor, of

Hereford. —— The recommendation of his Royal Highness, Prince Albert, as president of the Society of Arts, to turn to account the fine green Irish marble which has hitherto lain so entirely fallow, has been so far acted on, that samples have been sent over for the official consideration of the society, who are desirous of applying it to various economical as well as ornamental purposes.

CUNDY'S PATENT VENTILATING STOVE.

Close stoves, unless other provision be made for ventilation in the rooms heated by them, must necessarily produce very injurious effects. With an open fire-place there is always some ventilation, however partial and insufficient; but then we have cold drafts, and much waste of fuel. What we want is, an arrangement by which the vitiated air shall be removed, without waste of heat, and a proportional quantity of fresh air admitted at a higher temperature than the room is required to be of, so as to prevent cold currents.

The stove illustrated by the accompanying sectional diagrams appears to have considerable advantages in these respects. Its construction is very simple.

a.a.a.a. Show a fresh air channel, for admission of the external air.

b.b.b.b. Hot air chambers (formed with artificial stone, *d.d.d.d.*) through which the air passes into the room, and in its passage is heated without being injured.

c.c.c. The direction the smoke and vitiated air takes after it has passed through the fire and heated the artificial stone of the hot air chambers.

e. Blow pipe to preserve perfect combustion, placed immediately underneath the grating of fire-place.

A. and D. are regulators.

"The arrows shew the way the external fresh air is admitted, next passing through the hot-air chambers into the room, and lastly taken out of the room through the fire and up the chimney."

We have had no satisfactory opportunity, with such weather as we now enjoy, of examining these stoves in active operation; but a consideration of the principles on which they are constructed, and the encomiums passed on them by the minister of St. Thomas's Church, Charter-house, where they have been used for some time, lead us to think that we are properly carrying out one of our chief objects by rendering them known to our readers.

St. Thomas's church contains about 200,000 cubic feet of air; it has 1,000 feet superficial of glass; the horizontal area is about 5,200 feet superficial; and this building is warmed by two of the stoves, 27 inches square.

A correspondent writing to us on the subject, says: "If we calculate that the two stoves will supply fresh air, and take air out of the church at the moderate rate of a gentle pleasant wind, then 1,200 cubic feet of air will be introduced and removed per minute. The average rate is only about a foot in five minutes, at which the whole body of air would travel if, by the ceiling falling, it was forced out at two openings, each a foot square, and the air passing through each opening at the rate of 600 cubic feet per minute.

This is so very slow, that the motion of air travelling at that rate could not be perceptible; while the fact is, that a sensible motion can be given to the air in the church supplied with air and ventilated by these two stoves.

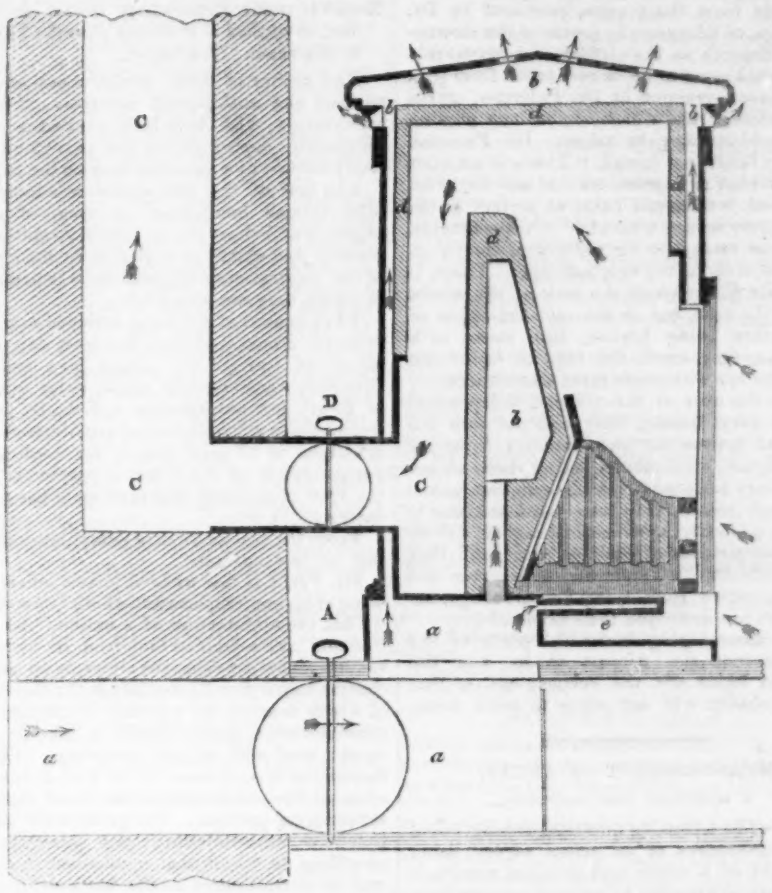
The quick motion which can be imparted to the air in the immediate neighbourhood of the stoves, by the ingress and egress of the air, and by the heat communicated to the air by radiation from the open fire-place, gives a rotary motion to the whole body of the air in the church, and which may be compared to the whirl given to water in a vessel into which water is running in at one place, and running out at another place at the same time. The cooling of the air by the walls and windows also assists the circulation; the air, as soon as it is cooled, descending.

All these motions combined soon mix the warmer and cooler portions of the air, and produce a temperature nearly the same.

While the most gentle and refreshing motion is perceptible, there is nothing like draft, and no sensation of cold air.

The ventilation is essentially downwards.

PATENT VENTILATING STOVE.



The hot air, at first leaving the stoves, rises rapidly in a column immediately to, and then spreading over, the whole space under the ceiling, while the air supplied to the fires is drawn from strata near the floor. The process of heated air ascending to the ceiling being continued, the warm air is brought down to the floor by the cooler air having been withdrawn by the continued operation of the fires.

In raising the temperature of the air twenty degrees, 8,000 cubic feet of air would be expelled by expansion from this church.

Circulation of air may be produced by a difference of temperature. But to produce ventilation, to a difference in temperature, must be added a constant supply of fresh air, at a higher temperature than the room is required.

From a church or building of the magnitude of the one now referred to, when properly warmed and ventilated, we ought to be able to obtain data by which to determine the heat and air requisite to supply smaller buildings, dwelling-houses, and rooms in dwelling-houses, with the required warmth and ventilation, and to vary these according to season and circumstances."

ELECTRIC TELEGRAPH AND CLOCK.

Experiments with a portion of the submarine telegraph at Portsmouth have clearly proved the possibility of annihilating distance in the transmission of intelligence between countries or lands divided by the sea.——Dr. Murray, of Hull, a correspondent of the *Mining Journal*, in noticing the damage done by the lightning to the telegraph just alluded to (which, however, was speedily remedied), recommends the application of a protective copper wire to every post through which the telegraphic wires are threaded along the line. Such wires running from about two or three inches above the post to a depth of eighteen inches below the surface of the earth would act, he observes, on the principle of the paragreles; and he thinks that had paragreles been attached to the various hot-houses, conservatories, &c., about London, which were devastated in the late storm, the destruction of glass would have been inconsiderable, and perhaps entirely averted. But, admitting that *the formation* of hail is an electrical phenomenon, we confess we cannot precisely see how such "miniature lightning rods" even though twenty feet long, could have either prevented the formation of the hail, or have protected the glass from the percussive effects of the hail *already formed*.—In the preceding week's impression of the same journal, Dr. Murray gives a very interesting account of the electric telegraph and electric clock of Mr. Bain, of Edinburgh. The simplicity of the first, its chief recommendation, we ourselves have already remarked: Dr. Murray thinks it the *ne plus ultra* of all that is desirable. The electric clock, however, "is the great source of attraction." Nothing, he says, can be more satisfactory or complete. "Allowing for tear and wear of materials from friction, and the oxidating influence of the atmosphere, the *perpetuum mobile* is here certainly realized. As long as the electricity of the earth continues—in other words, as long as the laws of nature last—so long will Mr. Bain's clock continue its oscillations, and register the transit of time;" and "it requires no prophet to foretel its entire ultimate adoption for public clocks. How singular and interesting the reflection," adds the doctor, "that by means of wires connecting the various public clocks of the metropolis with the main one, the pulse of the same *duplicate second* (for a double oscillation is registered) shall be *simultaneously* announced, however distant, or the index in the various rooms of a house beat in perfect unison with the parent one—verily, we live in an age of wonders! This wonderful power is entirely derived from the electricity of the earth—the pendulum conducts, and is the treasury of that power, and two simple wheels and their attachments, with the dead escapement, complete the magic machine—mimic of the movements of the *mechanique celeste!* By an ingenious provision, Mr. Bain's electric clock, at the manufactory, extinguishes the gas light, which illuminates its dial, at half-past twelve precisely."

ELECTROTYPED CASTS FROM DAGUERREOTYPED PICTURES.

We have now before us some beautiful *casts* in copper from daguerreotypes, and impressions from these casts, produced by Dr. Paterson, of Glasgow, by means of the electrotype. Smooth as the surface of a daguerreotype would seem to be, a cast taken from it in the manner arranged by Dr. Paterson, serves as a mould, from which almost any number of impressions may be taken. Dr. Paterson says in a letter to a friend, "There is no limit to the number of impressions that may be taken, the last of a thousand being as perfect as the first, and by taking a number of these moulds, numerous casts can be rapidly produced as bold and clear as the original type. There is very little difference in the look of the mould and of the cast, but in the cast the lights of the picture being higher, like those of a wood-cut, they catch the rays of light, and strike the eye with more force and clearness.

As to the uses of these casts, independent of their great beauty, they will put into the hands of artists the finest studies from the living figure, permanently fixing those almost momentary actions which the quickest pencil could not trace. They are well fitted also to hand to posterity, with faithful reality, the all but living pictures of eminent men; and they will, no doubt, be employed to preserve and multiply copies from many fine drawings, before time has destroyed their beauty."

The most highly burnished parts of the casts present the deepest shade, and the brightest lights are the deepest cut, so that they probably will not serve to print from.

MEASUREMENT OF AREAS.

A QUESTION FOR SOLUTION.

Sir,—The following question, arising out of the circumstances of an actual survey, being somewhat of a novel and practical nature, it may prove interesting to many of your readers, as it is not improbable that such exchanges may very frequently be required. By giving it a place in your paper you will very much oblige yours, &c., Urun Stuart.

A gentleman has three separate plots of building ground, numbered 1, 2, and 3, which he wishes to exchange for a single plot in the form of a square, as being more convenient for his intended purpose.

No. 1 is in the form of a triangle, of which the base is 400 yards, the vertical angle 61 degrees, and the angle at the middle of the perpendicular subtended by the base a right-angle. No. 2 is also in the form of a triangle, of which the perpendicular from the vertical angle upon the base is 360 yards; the difference of the segments of the base made by the perpendicular 246 yards, and the difference of the other two sides of the triangle 120 yards. No. 3 is in the form of a quadrilateral or four-sided figure, capable of being inscribed in a circle, and of which three sides are 221, 140, and 170 yards respectively, the fourth side being the diameter of the circumscribing circle.

Now, for these three separate plots he has been offered a square of 332 yards in the side; but as the land is of equal value, quantity for quantity, he wishes to know whether he will gain or lose by the exchange, and how much; the comparison to be made both geometrically and numerically.

Lime Burnt with Wood.—Some time ago, we announced that a series of successful experiments had been made at Lowther, with respect to obtaining lime by burning the stone with thick wood, instead of coal or coke; and we have now to add, that a few days ago another attempt was made with complete success. The stones (many of them of large size) were deposited in the kiln by Messrs. Parker and Jenkinson, under the superintendence of Mr. Mawson, architect, and the lime has turned out of first-rate quality. One of the stones thus converted into lime measured in length thirty inches, breadth eighteen inches, and depth fourteen inches. It required thirty-six gallons of water to slake it, and when completely pulverized, filled nine Winchester bushels.—*Carlisle Patriot.*

New Books.

Remarks on Architectural Character, by the Rev. J. L. Pettit, M.A. Oxford: J. H. Parker. Longman, London. 1846.

Remarks on the Principles of Gothic Architecture, as applied to ordinary Parish Churches, by the same. Rivington.

The author of these works is one of those zealous and enthusiastic amateurs of Gothic architecture, who have been produced in the universities during the last few years, and is already known by a valuable book on the subject.

The first of the two works is a handsome folio volume containing an essay of eleven pages, read before the Lichfield Architectural Society, and chiefly remarkable for the number of the illustrations (46), and the novel manner in which they are executed.

They consist of a regular series of examples, from the Saxon period to our own day, in the shape of spirited but slight pen and ink sketches, transferred to stone, quite guiltless of detail, but nevertheless sufficiently indicative to those who understand architecture. The intention is to give simply the outline and general effect of the different specimens, with the view of shewing that each style has a character of its own.

From the second work, a pamphlet, we make one or two extracts.

Mr. Pettit is less wedded to symbolism than some of his contemporaries in both Universities. "That the architecture of a nation," he says, "should take a decided tone from its historical reminiscences, or religious views, is so natural, that the conventional propriety on the observance of which depends its peculiar distinctions and characteristics, seems almost to take its place upon a level with natural propriety. Yet, influential as it is, it must, in the foundation, and even in the development of an art, occupy a subordinate position. No great work can be based on conventionality; and therefore I am unwilling to admit that symbolism is in any way to be considered as the basis and groundwork of our architecture, however materially it may have influenced it during its progress. Those great and sacred truths which are the objects of symbolism, while their contemplation cannot fail to give a tone to the productions of art, are not calculated, as they were never intended, to take the place of its natural principles; and to set them in this position is, in my opinion, to misapply them utterly, both to their own disparagement, and to the prejudice of the art itself."

The conclusion of the essay conveys a caution which well deserves consideration. "My object has been," he remarks, "not to lay down new principles, or to shake those already established, but simply to throw out suggestions which may enable us to ground our judgment upon extended, rather than limited views. The pleasure we receive from the contemplation of works of art will thus be immeasurably increased, while our correctness of discrimination will be in no way diminished. By narrowing our views, we run the risk of exchanging a natural for a conventional taste; we shall be led to regret that we have no longer that tendency to unqualified and unquestioning admiration which we possessed in our childhood, when we see the noblest works disfigured, to our eye, by some fancied disagreement with notions which have been studiously inculcated; we shall sacrifice our sense of the majesty of such buildings as York and Gloucester, to the idea that they are defective, from the want of high pitched roofs and spires. By framing our ideas of fitness according to one arbitrary standard, we shall lose the perception of that beautiful variety which pervades the whole range of Church architecture; we shall learn to criticise fastidiously, where a correcter taste and a more just impulse prompt us to admire; we shall become insensible to the solemnity of some of our grandest ecclesiastical structures, when we ought to be able to recognise, even in the simple village church, the development of an art, grounded on the firmest principles, devoted to the highest purposes, and taking a tone from the deepest and purest feelings of which the mind is capable."

The Quadrant, Piccadilly.—The inhabitants have petitioned for leave to remove, at their own expense, the colonnade in the Quadrant.

Correspondence.

SCHOOL OF DESIGN.

Mr. Editor,—There having been so much said respecting "The School of Design," I shall esteem it a favour if you will insert this letter in your valuable journal; as, although my friends are acquainted with the fact that it was projected by me, I wish the public and them to know that I have not had any thing to do with carrying it out. They have fallen into the error of making it a school of drawing instead of "design," and allowing the pupils to imbibe the notion, that the world will give them credit for greater attainments than they have actually arrived at, as at the Society of Arts, as I remarked in my evidence, and which caused them to make the request that I should draw up a plan, as you or any of your readers will see by consulting the minutes of evidence on "Arts and Manufactures."

My object was "a School of Design," where any day, at a few hours' notice, the manufacturer of any class, becoming a subscriber, might have any number of designs for an article, according to the number of the designers I had trained in the school for the purpose.

I subscribe my name, and remain, Mr. Editor, yours, &c.

Sept. 7th. Robert T. Stothard.

DISTRICT SURVEYORS' FEES.

Sir,—I have lately been repairing the roofs of eight fourth-rate houses at Balham Hill, and the district surveyor claims 10s. per house as his fee thereon.

No brickwork has been altered or repaired, but a portion of each roof was stripped for the purpose of repairs to gutters, at an expense of 12s. per house.

As a 10s. fee in a 12s. outlay appears most exorbitant, I shall feel obliged by your insertion of this letter, and a statement of your opinion as to the justice of the charge.

I am, Sir, &c.,

Devonshire Cottage, W. Woods.
Wandsworth-road, 8th Sept. 1846.

*** If the whole case be stated here, the district surveyor's charge is illegal.

Miscellanea.

Egyptian Architecture.—We reached Thebes, or rather Luxor, which is opposite to it on the eastern bank of the Nile, in the night, and as before going to bed the wind had sunk to a very gentle breeze, we gave orders to anchor there. Somehow or other, notwithstanding our determination not to make an unnecessary halt any where short of our ultimate destination, we could not reconcile ourselves to the idea of passing by Thebes in the dark—our resolution, which had valiantly resisted the Pyramids, staring us in the face, as it were, broke down in anticipation before the fallen majesty of those stupendous remains, and we even agreed that we would indulge ourselves with a partial peep at them, and so we retired to rest to dream of obelisks and sphinxes, and awoke to behold the sun rising above the colossal pillars of the Temple of Luxor, and tinging with rosy light the summit of the lovely obelisk of pale red granite, whose sister has been transported from this sublime solitude to adorn the Place de la Concorde at Paris. A fragment of fourteen gigantic columns faces the river; this was my first view of the architecture of ancient Egypt, and—shall I confess the truth to you?—while lost in astonishment at the might and massiveness of what I beheld, I could not detect in the emotions they excited any of that delighted admiration which has filled me with enthusiasm at the sight of monuments far less imposing. 'This is *stupendous*, indeed,' said I to myself, 'but is it *beautiful*?' and candour answered No!—*Pilgrimage to the Temples of Egypt, by Mrs. Romer.*

Fastening for Shop Shutters.—A mode of fastening shop shutters, by which the old-fashioned and destructive shutter-bar is superseded, has been registered by Jennings, of Great Charlotte-street, Blackfriars-road, and is advertised in another part of our paper. It is simple and inexpensive, and seems worthy the consideration of builders.

RECIPE FOR MAKING "AVENTURINE."—This costly and beautiful sort of glass, used for the ornamenting of objects of art and vertu—could not be hitherto made but at Venice. Only so much was known, that it was very minute crystals of metallic copper of great lustre, which, mixed throughout the mass of dark yellow-reddish glass, imparted to this substance that lustrous and iridescent appearance, for which it was so much praised. Messrs. Frémy and Calendeau, chemists, have lately laid before the French Institute their procedure of making this valuable substance. It consists in the mixing of pounded glass with hammerschlag and oxide of copper, and keeping both for a considerable time in a state of fusion. By these means, the copper crystallizes in the glowing mass of glass in the shape of small octohedræ, which being dispersed through the mass, impart to it that beautiful scintillating appearance. Still the original Venetian samples and those made by Messrs. Frémy and Calendeau were not of equal quality, the mass of glass wherein the crystals are imbedded, being in the former clear and pellucid, in the latter rather soily, and only transparent: the crystals in the Venetian are large, very regular; in the French, small, irregular, and fibrous. The principle, however, is found, and it will only require (as with every thing else) time and experience to equal the Venetian patterns. This information may be useful to our now unshackled glass manufacturers.

THE PLANTERS' HOUSES IN THE MAURITIUS.—They are built in detached pieces, so that a great deal of ground is covered by the buildings belonging to one residence. These consist generally of a principal dwelling-house, and a number of small buildings, which in India are called "bungalows," here "pavilions." They have generally a verandah attached to them, and commonly contain two or three small rooms, which are used as apartments for visitors—a mode of lodging them which possesses many recommendations, though they are somewhat counterbalanced by the fact of their having to provide themselves, on retiring to rest, with cloaks, lanterns, and umbrellas, in order to make their way through a storm of thunder, lightning, rain, and wind, to their bedrooms, situate perhaps at the very extremity of the establishment. The principal dwelling-house usually contains a "salle à manger," and a "salle de compagnie," or drawing-room, on the ground floor, over which are bed-rooms, occupied exclusively by the planter and his family. The staircase is generally on the outside; the kitchen and store-room all detached buildings. The drawing-rooms are generally furnished in a showy manner, with a superabundance of looking-glasses. The dining-room is the worst apartment in the house. The floor is of dark wood, which generally takes a fine polish, and by being rubbed every morning with wax and a brush, rivals a mahogany table in brilliancy.—*England's Colonial Empire.*

HOISTING.—On the morning of the 31st ult., while the workmen at the Hamburgh Theatre were hoisting to its place a splendid bronze chandelier for gas lights, just brought from London, and weighing above 10,800 lbs., the rope broke, and the enormous mass, falling to the ground, was broken to pieces, crushing two Englishmen who had come over to superintend its being suspended.—*Morning Herald.*

ARCHITECT FOR ST. CLEMENT DANES.—The managers of the St. Clement Danes Holborn Estate Charity, requiring an architect to spend about 10,000*l.* in building some almshouses, advertised for parties willing to act in that capacity. Thirty applications were sent in, and on Thursday last, "Mr. Hesketh, builder, of Arundel-street," was appointed!

THE ROAD IN FLEET-STREET.—The appearance presented by the paved way laid down in Fleet-street, the execution of which has annoyed all London for some weeks past, is far from satisfactory. The surface is irregular, here and there convex instead of concave, and, indeed, appears in parts to have sunk considerably.

FREE EXHIBITION.—The exhibition of pictures and sculpture, selected by the Art Union of London prizeholders, was visited last week by more than 50,000 persons, without the occurrence of the slightest accident or disturbance. In the present week the numbers have been even greater still.

WEST LONDON RAILWAY.—A meeting of the shareholders was held on Wednesday last, to receive the report of arbitrators, appointed to decide the rate at which the rent to be paid by the London and Birmingham Company shall be apportioned to the different classes of shareholders. Considerable displeasure was expressed on account of the Birmingham Company not having opened the line for passenger traffic. The inhabitants of Kensington, Hammersmith, Bayswater, and other large districts, are forced unnecessarily to travel to Euston-square and Paddington with locked-up stations at their own doors.

SALE OF SOUTHEND PIER.—An attempt was made on Friday week to sell by auction the pier at Southend, the longest it is said in Europe (unless the Leith pier now exceed it), as it extends to a length of a mile and a quarter at low-water mark. The bidding began at 10,000*l.*, and rose to 16,000*l.*, at which sum it was bought in by the Public Works Loan Commissioners, the mortgagees in possession according to law, for advances for its construction. The materials alone, exclusive of the rights and privileges, are said to be worth 10,000*l.* to 12,000*l.*

THE NATIONAL GALLERY is closed and will remain so till the 26th of October. The East-India Company's Museum, where there is a collection of curiosities well deserving examination, is closed till the 30th of the present month.

NOTICES OF CONTRACTS.

[We are compelled, by the interference of the Stamp Office, to omit the names of the parties to whom tenders, &c. are to be addressed. For the convenience of our readers, however, they are entered in a book, and may be seen on application at the office of "The Builder," 2, York-street, Covent Garden.]

For the erection of a new workhouse at Gravesend, on a plan altered and reduced from the former one.

For building about 600 yards of sewers at Ventnor, Isle of Wight.

For cleansing about 1,400 feet of sewer in the Edgeware-road, Mary-le-bone.

For the erection of a school and teacher's residence at Seer Green, near Beaconsfield.

For building sewers in Digbeth, St. Martin's-lane, and Edgbaston-st. Birmingham, a length of 368 yards (class B).

For deepening and widening the Louth Forty Foot River from Gutheran Cote to Dowsby Lode, or thereabouts, and such other works as the engineer will recommend to be proceeded with, or as may be expedient.

For the Needham Market and Thurston stations on the Ipswich and Bury St. Edmund's Railway (short extension of time).

For the mason and brick work required in the erection of a church in the Trinity district of the parish of Rotherfield Greys, Henley-on-Thames.

For the plaster work required in the erection of the Trinity District Church, at Henley-on-Thames.

For the wright and carpenter work required in the erection of the Trinity District Church, at Henley-on-Thames.

For the slater, plumber, glazier, and other work required in the erection of the Trinity District Church, at Henley-on-Thames.

For repairing and keeping in repair for three years, certain roads at Norwich.

For iron roofing, to cover an area of 460 feet in length by 120 feet in breadth, over the passenger shed at the Dublin terminus of the Midland Great Western Irish Railway.

For the supply of 100 tons of cast scrap iron, free of rubbish.

For six locomotive engines and tenders for the Dundalk and Enniskillen Railway Company.

For the erection of stables and sheds on the Workhouse ground of the Midleton Union Cork (promptly).

For painting the whole of the old exterior work of the Middlesex Hospital buildings, twice, in the best oil colours, in a workmanlike manner.

For a supply of Guernesy granite chippings and Kentish Rag stone, by the yard, to be delivered at Camberwell to the Board of Poor Law Guardians.

For lighting the streets of Stow-market for seven months.

For the whole of the works on that part of the Aberdeen Railway from Dee to the Cove, a length of about five miles.

For the whole of the works on that part of the Aberdeen Railway from Water of Cowie to Blackhills, a length of about two miles and a half.

For 20,000 to 30,000 oak or hazel rods, 10 to 15 feet long for Kirkaldy, Scotland.

For several first-rate masons at Windsor: liberal wages.

For several gas-chandelier makers for making gas pendants.

For letting on lease premises for a plumber or painter in Edgeware-road.

For the disposal of an oil and colourman's business in town: no premium.

For the disposal of a gas-fitter and ironmonger's business close to the city.

For the disposal of a forged nail manufacturer's business at Birmingham.

For the disposal of an iron-foundry business in the country.

For two journeymen glaziers, at Edinburgh.

For a painter to go to Demerara, as foreman, to imitate marbles and woods, and able to write: wages for three years, 60*l.*, 70*l.*, and 80*l.*, besides board.

For a brick and tile maker, also for two additional hands, at Lynn.

For the letting of a brick-kiln near Lynn, with jamb of fine brick earth.

For the letting of waterside premises for a builder, stonemason, &c., at Lambeth.

For the letting of a granite quarry in Argyleshire.

For the letting or disposal of the well-known engineering, foundry, and machine-making works, in Hutchinson-town, Glasgow.

APPROACHING SALES OF WOOD, &c.

BY AUCTION.

At Withernwick Wood, near Hull: about 2,500 ash, oak, and other trees, in small lots.

At Ingleby Wood, Lincolnshire: 63 acres of growing timber.

At Wivenhoe, Essex: several thousand feet of oak slabs in convenient lots.

At Nidd (Leeds): a quantity of timber and bricks.

At Saffron Walden, and Ashdon, Essex: 180 oak timber trees, 70 ash ditto, 49 oak and ash saplings, &c.

At Southampton: a cargo of Canadian-wood goods.

At Boxted, near Colchester: ash and oak timber.

At Pimlico: a builders stock in trade, comprising 700 dry yellow deals and planks, flooring and lining boards, &c., with stone, tools, apparatus, &c.

At Southampton: a large quantity of paper hangings.

At Liverpool: an extensive assortment of paper-hangings.

At Birkenhead: a varied stock of paper-hangings.

At Leeds: a stock of paper-hangings.

At Cork: the glass-works.

At Wolverhampton: an edgetool makers stock in trade.

At Hartshill, near Dudley: a high pressure steam-engine with appurtenances, an 800 gallon wrought-iron tank or gasometer, smith's bellows, &c.

At Leicester: an iron and brass foundry.

At Cairns, near New Alyth, Scotland: about 220 lots of old larch, fit for building or sleepers.

At the late Earl of Blessington's estates in Ireland: the largest plantation of timber in Ireland, and fit for sleepers, &c.

At Southwark: a stock of architectural ornaments, artificial stone statues, figures, &c.

At 2, Berners-street, Oxford-street: 4,000 pieces of paper-hangings.

At Bromley, Kent: about 600,000 stock and place bricks, in lots of 5,000 to 10,000.

BY PRIVATE TENDER.

At Poole: a cargo of Riga timber and deals.

At Southampton: a cargo of Canadian-wood goods.

At Woodchester-park, Gloucestershire: an extensive lot of oak trees.

At Callander, Perthshire: 2,000 to 3,000 Scots fir trees, planted in 1770, and fit for building or for sleepers.

At Southampton: a cargo of Canadian wood goods.

At Woodchester-park, Gloucestershire: a quantity of oak timber of large size.

At Lynn: 180,000 clamp bricks.

At Hythe: 300,000 white bricks at reduced prices.

At Kirkstall, near Leeds: three well cranes, &c.

At Birmingham: a builder's business of seven years standing.

TO CORRESPONDENTS.

"*Catholicus*," accuses us discourteously of bigotry, on the ground that we do not describe the different Roman Catholic churches which are from time to time consecrated. We should have cause to blush if the accusation were true, and challenge "Catholicus" to point out a single sentence ever written by us to justify his assertion. Even if we did not personally profess toleration in its widest sense, art is of no sect or party. "Catholicus" must be aware that for descriptions of provincial buildings we are mainly dependent on correspondents. As to the structure of which he speaks, St. Giles's church at Cheadle, we should gladly insert any verified account.

"*C. B.*"—A notice to the district surveyor is unnecessary.

"*J. Yates.*"—The intention of our correspondent was precisely the reverse from that supposed by "J. Y.," and will be so understood by all those who have read our previous articles on contracts.

"*C. B. A.*"—No further modifications of the Buildings Act have yet been made.

"*T. I. M.*"—A memorial to the Sewers' Commissioners would probably be useless; the landlords should stir.

"*W. D. C.*"—The present Act of Parliament does not set forth any price for party walls.

"*Mechanic.*"—Apply to a patent agent. We may name Messrs. Barlow and Le Capelain, Nos. 89 and 36, Chancery-lane.

"*J. R. N.*" shall appear.

"*Carolus.*"—To become a candidate for admittance to the Antiquarian Society, a recommendation signed by four fellows is necessary.

"*Paint on old Iron.*"—A Correspondent says, "I am requested to paint, or otherwise renew, the iron railing round the church-yard; but I find it in a very rusty and cankered state, as it is now 20 years since it was painted. I am at a loss to know how to act with it, being told that if painted now, although well cleaned, the paint would all come off again. Can any of your readers advise me as to the best plan to proceed on?"

"*Palace Question.*"—Article postponed, plan not being engraved in time.

Received.—"A Professional Man," "An Idle Draughtsman," Kelly's "Practical Builders' Price Book."

*** Correspondents are requested to address all Communications to the EDITOR, 2, York-street, Covent-garden.

CHARGE FOR ADVERTISEMENTS IN "THE BUILDER."

	£.	s.	d.
For Sixty Words or less	0	5	0
Every additional Thirty Words	0	1	0
One Column	2	2	0
One entire Page	5	5	0

For a series of advertisements above 5s. a reduction will be made.

ADVERTISEMENTS.

GAS FROM 40 TO 60 PER CENT.' SAVED.

CONTRACTS taken for Lighting Towns, Villages, Mills, Factories, Lighthouses, Railway Stations, Signal Lights, Dockyards, Churches, Colleges, Hospitals, Theatres, Public Institutions, Prisons, Barracks, Asylums, Schools, Union Poor-houses, Public Gardens, &c. &c., with pure and brilliant GAS by FRANCIS' PATENT GAS LIGHT APPARATUS, either by purchase or rental.—Applications at the office and factory, 112, High Holborn, and Eagle-street, Red Lion Square, London. The premises are lighted up by gas on the principle of this invention. Can be seen from Ten till Four daily, and where prospectuses and every information can be obtained.

PAVING, 2s. 9d. PER SQUARE YARD. Basements, Foot walks, Malt-houses, Corn Stores, Floors of Warehouses, and every description of pavement laid down at the above low price, and the work guaranteed.—Apply to JOHN PILKINGTON, POLONCEAU'S BITUMEN PAVEMENT OFFICE, 15, WHARF-ROAD, CITY-ROAD.—N.B. Country Agents and Railway Engineers and Contractors supplied with the best bitumen at 27s. 6d. per ton.

COMMISSIONERS OF FINE ARTS' REPORT ON THE MEANS OF PREVENTING DAMP IN WALLS.

THE DIRECTORS of the SEYSSEL ASPHALTE COMPANY have much pleasure in recommending to the notice of Architects, Builders, and others, the application of the ASPHALTE of SEYSSEL as the only effectual means of preventing DAMP rising in WALLS.

J. FARRELL, Secretary.

Seyssel Asphalte Company's Works,
"Claridge's Patent."
Stangate Depôt, London.

The following account of its application is extracted from "The Appendix to the Commissioners of Fine Arts' Report," page 18:—

"In 1839 I superintended the construction of a house of three stories on the Lac d'Enghien. The foundation of the house is constantly in water, about 19½ inches below the level of the ground floor. The entire horizontal surface of the external and internal walls was covered, at the level of the internal ground-floor, with a layer of SEYSSEL ASPHALTE, less than half an inch thick, over which coarse sand was spread.

"Since the above date no trace of damp has shewn itself round the walls of the lower story, which are for the most part painted in oil of a gray stone colour. It is well known that the least moisture produces round spots, darker or lighter, on walls so painted, yet the pavement of the floor, resting on the soil itself, is only about 2½ inches above the external surface of the soil, and only 19½, at the utmost, above that of the sheet of water.

"The layer of Asphalte having been broken and removed, for the purpose of inserting the sills of two doors, spots indicating the presence of damp have been since remarked at the base of the door-posts."

CHEAP ROMAN CEMENT is sold in Casks that will not contain five bushels, even by some manufacturers of a very respectable name. Consumers should see that the standard size cask is 29 inches long by 17½ across the head, outside measure. Any workman with a rule in his pocket can ascertain this.

A NEW CEMENT has been invented by an Operative, which, in its application, supersedes all others in use. He is willing to dispose of the same, under an agreement to manufacture it for any one finding capital, at a fair remuneration for himself.—Apply, by letter, to J. ALLEN, 91, Broadwall, Blackfriars-road.

PATENT METALLIC SAND CEMENT, requiring no colour or paint, and free from cracks and blisters, mixed ready for use at 8s. per cask; 2s. 6d. allowed for each cask returned in good order. 3½ bushels common sand to be added to each cask of Metallic Cement, which will float 14 square yards of stucco.—Apply at the Metallic Cement Wharf, King's-road, Camden New Town.

THE PROJECTED RAILWAYS.

BENSON, LOGAN, and CO.'S PATENT METALLIC SAND CEMENT.—Its merits, as stated in letter to the Proprietors, by James Thomas Knowles, Esq., Architect, Raymond's Buildings, Gray's Inn, are:—

1st.—"The great tenacity with which it adheres to brick, stone, and iron.

2ndly.—"Its freedom (when properly applied) from those cracks and flaws, by which the cements generally used for external stuccoing are so frequently disfigured.

3dly.—"The total absence of the unsightly tint produced by vegetation.

4thly.—"The increased hardness which it acquires from exposure to atmospheric influences.

5thly.—"The great beauty, accuracy, and durability of the mouldings, capitals of columns, crockets, finials, and other architectural enrichments and decorations formed of it, the smallest and most delicate members of which, as well as the sharpest arises, have withstood uninjured the severities of our climate during many winters, and now present the same perfect and highly finished appearance as would be produced by stone carvings carefully executed.

6thly.—"The excellent and agreeable tone of colour which it assumes naturally, and retains without the aid of any colouring or painting.

"And lastly, its extreme hardness and almost entire incompressibility when used as a mortar in the construction of inverted or relieving arches, foundations under important superstructures, and small bearing piers, which have to sustain great weights. For all these purposes it has been extensively used under my directions, and in some cases has been exposed to very severe trials. The results have, however, without one exception, been most satisfactory; and I do not believe that there are any known substances so well adapted for the execution of works, in which the greatest strength and durability are essential."

Price of Metallic Sand at Swansea (place of manufacture), 10s. per ton, or supplied in London at 20s. per ton of twenty-one bushels.

Further information will be given, and specimens shewn, on application to Mr. C. K. DYER, 4, New Broad-street, and at the Metallic Cement Wharf, King's-road (opposite Pratt-street), Camden New Town, London.

KEENE'S PATENT MARBLE CEMENT.

WITHOUT noticing CAUTIONS, which are as absurd as they are uncalled for, or disproving assertions, which carry with them their own refutation, the patentees of KEENE'S CEMENT venture to believe, that this material will very advantageously stand the test of comparison with any cement of a similar nature, however INVALUABLE, now before the public. They derive this opinion from its all but exclusive use in the new buildings north of Hyde-park, on the Brompton estate, and in many other public and private edifices, both in London and the country. Amongst others may be mentioned the works recently executed at the Colosseum, Regent's-park, where its hardness and beauty of appearance have caused it to be extensively used for skirting and other mouldings, in place of wood, for columns instead of marble, and as a substitute for stone in paving the floors of the corridors and conservatories.

Patentees and manufacturers, J. B. WHITE & SONS, Millbank-street, Westminster,

MESSRS. THOMAS FREEN and CO., beg to inform their customers and builders generally, that they have made considerable additions to their Works, which will enable them to execute with dispatch all orders with which they may be favoured either for home use or export; they manufacture only one quality, THE BEST ROMAN CEMENT, and all the packages bearing their brand contain full measure.—ROMAN CEMENT WORKS, Tuscany Wharf, Kingsland Road, London.

TO ARCHITECTS, ENGINEERS, CONTRACTORS, BUILDERS, MASONS, AND PLASTERERS, MERCHANTS, SHIPPERS, AND THE PUBLIC IN GENERAL.

JOHNS and CO.'S PATENT STUCCO CEMENT.—The following are the positive advantages possessed by this Invention over every Cement hitherto introduced:—It will effectually resist Damp. It will never vegetate nor turn green, nor otherwise discolour. It will never crack, blister, nor peel off. It will form a complete Stone casing to any Building covered with it. It so closely resembles Stone that it is impossible to detect it. It never requires either to be painted or coloured. It will keep fresh and good in the cask in any Climate for any number of years. It is the only Cement that can be depended upon for export. It is the only Cement that can be used with confidence by the Sea-side. It may be used in the hottest or coldest Climates at any season. It will adhere to any substance, even to Wood, Iron, or Glass. It will carry a larger Proportion of Sand than any other Cement. It matures by age, and becomes perfect when other Cements begin to perish. It may be worked through the Winter, as frost has no effect upon it. It may be used on the Inner Walls of new Houses, which may be papered over or painted directly. Roofs laid or pointed with this Cement will remain undamaged by the severest Storms. Any Plasterer may apply it, the Instructions for use being very clear and distinct. The first cost of this material does not exceed that of the cheapest Cement now in use; but with all the above-named extraordinary and valuable advantages, nothing can approach it in point of economy.

Architects and Builders who have used this Cement have declared that it requires only to be known, to be universally preferred.

Specimens may be seen, and a Prospectus fully describing the Cement and its mode of application, together with a volume of Testimonials from every part of the Kingdom, may be obtained on application at the office of "The Builder," and of MANN and CO., SOLE AGENTS for the Patentees, 5, Maiden-lane, Queen-street, Cheapside, London: of whom also may be had,

JOHNS and CO.'S PATENT STONE-COLOUR STUCCO PAINT, expressly intended for Painting over exterior Walls of Houses that have been covered with Roman or other Cements, and which have become dirty and discoloured. It is in every way better suited for this purpose than White Lead Paint, which will frequently come off in flakes, being in direct chemical opposition with Cement; whereas MESSRS. JOHNS and CO.'S PATENT PAINT having an affinity for Stucco, binds itself with it, stopping the suction, thereby rendering the wall proof against weather, and in the finish producing a pure stone-like effect, produceable by no other Paint whatever. It is cheap in its application,—and may be used by any Painter, in any climate, even in the most exposed Marine situations.

TO ARCHITECTS, BUILDERS, AND THE PUBLIC IN GENERAL.

GEORGE JENNINGS, of 29, GREAT CHARLOTTE STREET, BLACKFRIARS ROAD, begs to call the attention of Architects, Builders, &c., to his REGISTERED FASTENING for SHOP SHUTTERS, &c., which entirely supersedes the use of shutter-bars. Thereby effecting a great saving of labour, as by the old method, the bar has to pass through the hands of some one upwards of six hundred times in twelve months, which tends to deface the whole front more or less every time the bar is put up or removed. The fastening is secret, simple, and sure, in its action, and can be affixed to any shop-front in two hours, without any alteration to the shutters. New fronts fitted at a less expense than a shutter-bar would amount to. A liberal allowance to the trade, and any further information may be obtained by inclosing a postage stamp to the above address.—A Model may be seen at the office of "The Builder."

LIGHTNING CONDUCTORS FOR BUILDINGS.

A. SMITH'S PATENT COPPER WIRE ROPE is being daily employed for the protection of CHURCHES and other buildings from the effects of thunder storms; it possesses important advantages over other forms of conductors. References can be given where it has been applied for some time past to CHURCHES, PUBLIC and PRIVATE BUILDINGS, &c., &c. Its general adoption in the Naval and Mercantile Marine of this and other countries is the strongest possible EVIDENCE of its EFFICIENCY, &c.

A. SMITH begs the attention of those engaged in building to his IMPROVED PATENT PANELLED AND REVOLVING IRON SHUTTERS,—Also, the Patent Weather-tight Fastening and Cill Bar, for French Casements, which are so much admired for their security, simplicity, cheapness, and efficiency. Of the merits of his

Patent Double and Single Action Door Springs,
Improved Flooring Cramps,
Patent Wire Sash Lines, &c. &c.,

Little need be said, as they are pretty generally known and appreciated.

Manufactory for Iron Suspension, Sliding, and other Doors, Strong Rooms, Plain and Ornamental Palisading, Gates, and Columns.—Also, Metal Sashes, Shop-fronts, Stall-board Plates, Brass butt, and other Hinges. Buildings heated upon a new, safe, and superior plan.

Estimates given for every description of Metal-work.

A. Smith, 69, Princes-street, Leicester-square, London.

SNOXELL'S PATENT SAFETY REVOLVING WOOD SHUTTERS,

Manufactory, 96, Regent-street, and 131, Chancery-lane.

THE Patentee can confidently recommend these Shutters both for security and durability. The edges being sheathed with IRON, and the cost little more than common shutters, their construction so simple, that the largest establishment can be opened or closed in a few moments with the greatest possible ease without the use of machinery. Their superiority over other Revolving Shutters consists in being made without metal hinges, consequently cannot rust, buckle, or get out of order, and are equally safe. W. SNOXELL will have much pleasure in giving reference to numerous establishments where they are fixed, having on all occasions given the greatest satisfaction.

INJUNCTION.

BUNNETT and CORPE'S Patent REVOLVING IRON SHUTTERS.—Since the verdict found in favour of the Patentees, in the Court of Exchequer, in the action tried by order of the Court of Chancery, that Court has granted a perpetual Injunction for restraining all infringements of this Patent, and therefore all parties are hereby cautioned against infringing the same.

THE PRICES ARE GREATLY REDUCED, and BUNNETT AND CORPE'S PATENT IRON SHUTTERS ARE THE CHEAPEST AS WELL AS THE BEST. They are made with convex laths, if required. The worm and wheel motion for raising and lowering revolving iron shutters (as secured by this Patent) is the only safe and durable mode of effecting that object. In large shutters it is indispensable.

Some thousands of Bunnett and Corpe's Shutters have now been put up, without a single complaint of their want of strength or security; and nine years' practical experience (during which they have adopted every real improvement) enables the Patentees to challenge comparison with any others. They will guarantee all Shutters put up by them to keep in order, and last twice as long as any with thin convex laths.

B. and C. also manufacture REVOLVING WOOD SHUTTERS (the Patent for which has expired), at the same prices as other makers, but greatly superior, being fitted with their patent raising gear, and proper metallic hinges, without which no shutter can be safe or durable.

BUNNETT and CORPE are likewise Patentees and Manufacturers of METALLIC SASH-BARS, MOULDINGS, &c., IN BRASS, COPPER, OR ZINC, FOR SHOP FRONTS, WINDOWS, SKYLIGHTS, AND VARIOUS OTHER PURPOSES.

Shop-fronts fitted with Iron Shutters, Patent Brass or Zinc Sashes, Plain or ornamental, handsomely Engraved, Moulded, Stall-board Plates, best Plate Glass, and Internal Brass Fittings of all kinds, superior in quality and workmanship, and lower in price than any other house.

Contracts taken in Town or Country.

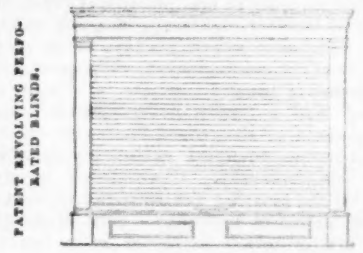
Metal Drawing and Stamping for the Trade.

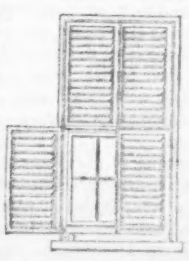
Office at No. 26, Lombard-street, London; Works, at Deptford, Kent.

Steam-engines, Sawing, Planing, and Moulding, Cutting-machines on Improved Plans, especially adapted for Builders' purposes, may be seen in operation at the Works.

IMPROVED PATENT CONVEX IRON REVOLVING SAFETY SHUTTERS.

PATENT SAFETY IRON SLIDING SHUTTERS.





The attention of Architects, Builders, Blind Makers, and the Trade generally, is particularly requested to the IMPORTANT patented IMPROVEMENTS in the above enumerated Articles, and inspection invited, at the Manufactory of the Patentees, R. HOWARD and Co., 115, Old Street, London; or at the Licensees.

Engravings and Prospectuses may be had at the above address, or will be forwarded on application.

The great importance of STRENGTH and STIFFNESS in the Laths of REVOLVING IRON SHUTTERS, when required for SECURITY, is so obvious, that it is only necessary to point out the fact that the PATENT CONVEX LATHS ARE 12 TIMES STRONGER THAN THE ORDINARY FLAT LATHS (as shewn by the engravings and prospectus), to ensure their general adoption.

REVOLVING IRON SHUTTERS MADE OF THE COMMON FLAT LATHS, AT A VERY CONSIDERABLE REDUCTION OF PRICE.

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